

نموذج اختبار الفترة الدراسية الثالثة للصف الثاني عشر (علمي)

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أولاً الأسئلة المقافية

السؤال الأول :  
(أوجد) a

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$$\int \left( \frac{x^2 - 2}{x^2} \right)^2 dx$$

$$= \int \left( \frac{x^4 - 4x^2 + 4}{x^2} \right) dx$$

$$= \int \left( x^2 - 4 + \frac{4}{x^2} \right) dx$$

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أوجد b

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$$\int \frac{5}{\sqrt{x}(\sqrt{x}+2)^3} dx$$

$$5 \int (\sqrt{x}+2)^{-3} \cdot \frac{1}{\sqrt{x}} dx$$

نفرض  $u = \sqrt{x} + 2$

$$du = \frac{1}{2\sqrt{x}} dx$$

$$5 \int u^{-3} du$$

$$2du = \frac{1}{\sqrt{x}} dx$$

$$= 10 \frac{u^{-2}}{-2} + C = -\frac{5}{u^2} + C$$

$$= -\frac{5}{(\sqrt{x}+2)^2} + C$$

الدوري الـ ٢  
أوجد (a)

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$$\int x \sec^2(x^2 + 2) dx$$

نفرض  $u = x^2 + 2$

$$du = 2x dx$$

$$\frac{1}{2} du = x dx$$

$$\text{حل ٢: } \frac{1}{2} \int \sec u du$$

$$= \frac{1}{2} \tan u + C$$

$$= \frac{1}{2} \tan(x^2 + 2) + C$$

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أوجد (a)

$$\int 3x e^{2x+1} dx$$

$$u = 3x$$

$$du = e^{2x+1} dx$$

$$du = 3 dx$$

$$v = \frac{1}{2} e^{2x+1}$$

$$\text{حل ٣: } \int u dv = uv - \int v du$$

$$= \frac{3}{2} x e^{2x+1} - \frac{3}{2} \int e^{2x+1} dx$$

$$= \frac{3}{2} x e^{2x+1} - \frac{3}{4} e^{2x+1} + C$$

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نموذج 1 اختبار الفقرة الثالثة / الصف الثاني عشر علمي

$$f(x) = \frac{2x-1}{x^2-4x+3} \quad f)$$

$$\int f(x) dx \quad b)$$

السؤال الثالث: a) لتكن الدالة

أوجد a) الكسور الجزئية

$$x^2 - 4x + 3 = (x-3)(x-1)$$

$$\frac{2x-1}{x^2-4x+3} = \frac{A_1}{x-3} + \frac{A_2}{x-1}$$

$$2x-1 = A_1(x-1) + A_2(x-3)$$

$$x=3 \Rightarrow 5 = 2A_1 \quad A_1 = \frac{5}{2}$$

$$x=1 \Rightarrow 1 = -2A_2 \quad A_2 = -\frac{1}{2}$$

$$\frac{2x-1}{x^2-4x+3} = \frac{\frac{5}{2}}{x-3} + \frac{-\frac{1}{2}}{x-1}$$

$$\int f(x) dx = \frac{5}{2} \int \frac{1}{x-3} dx - \frac{1}{2} \int \frac{1}{x-1} dx$$

$$= \frac{5}{2} \ln|x-3| - \frac{1}{2} \ln|x-1| + C$$

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$$\int_{-2}^2 \sqrt{4-x^2} dx$$

أوجد b)

$$\text{نفرض } y = \sqrt{4-x^2}$$

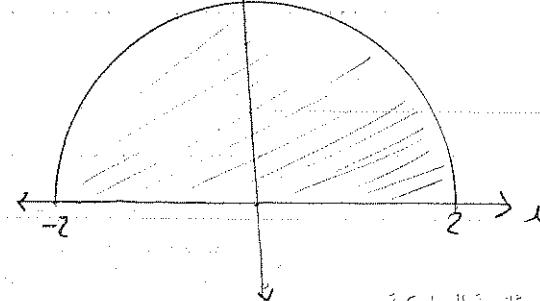
$$y^2 = 4-x^2 \Rightarrow x^2+y^2=4$$

حقل معاشر طائرة مركزها (0,0) ونصف محاطها

حقل النصف العلوي لمعاشر الدائرة

$$= \int_{-2}^2 \sqrt{4-x^2} dx = A$$

$$\text{ساحة المثلث المظللة} = \frac{1}{2}\pi r^2 = \frac{1}{2}\pi(4) = 2\pi$$



نماذج البنود الموضوعية

في البنود من ١ إلى ٣ عبارات لكل بند ظلل في ورقة الإجابة  
إذا كانت العبارة صحيحة وظلل **a** إذا كانت العبارة خطا

$$\int \frac{1}{x^2} dx = \frac{1}{x} + C \quad (1)$$

$$f'(x) = 2xe^{2x} \text{ فإن } f(x) = e^{2x} \quad (2)$$

$$\int_{-1}^1 (|x|)^3 dx = -\frac{1}{2} \quad (3)$$

في البنود من ٤ إلى ٨ لكل بند أربعة اختيارات واحدة منها صحيح  
اختر الإجابة ثم ظلل في ورقة الإجابة دائرة الرمز الدال عليها

$$\text{إذا كان } 1 \text{ فإن } \frac{dy}{dx} = x^{-\frac{2}{3}}, y = -5, x = -5 \quad (4)$$

**a**  $\frac{x^2}{3} - \frac{14}{3}$

**b**  $3x^{\frac{1}{3}} + 2$

**c**  $3x^{\frac{1}{3}} - 2$

**d**  $3x^{\frac{1}{3}}$

$$\int \frac{x-1}{\sqrt{x-1}} dx = \text{www.kwedufiles.com} \quad (5)$$

**a**  $\frac{1}{3}(x-1)^{\frac{2}{3}} + C$

**b**  $\frac{2}{3}(x-1)^{\frac{3}{2}} + C$

**c**  $\frac{2}{3}(x-1)^{\frac{2}{3}} + C$

**d**  $\frac{3}{2}(x-1)^{\frac{2}{3}} + C$

(6) الصورة العامة للمشتقة العكسية للدالة  $f(x) = 8 + \csc x \cot x$  حيث  $f(x)$  هي:

**a**  $F(x) = 8x + \csc x + C$

**b**  $F(x) = 8x - \cot x + C$

**c**  $F(x) = 8x - \csc x + C$

**d**  $F(x) = 8x + \cot x + C$

$$\text{إذا كانت } y = (\ln x)^2, \text{ فإن } \frac{dy}{dx} \text{ تساوي:} \quad (7)$$

**a**  $\frac{\ln x}{x}$

**b**  $\frac{2\ln x}{x}$

**c**  $\frac{x\ln x}{2}$

**d**  $\frac{2\ln^2 x}{x}$

$$\int_{\frac{\pi}{2}}^{\frac{\pi}{2}} (\sin x + \cos x) dx = \text{www.kwedufiles.com} \quad (8)$$

**a** 4

**b** 2

**c** 0

**d**  $\pi$

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إجابات البنود الموضوعية

- |   |   |   |   |   |
|---|---|---|---|---|
| 1 | a | b |   |   |
| 2 | a | b |   |   |
| 3 | a | b |   |   |
| 4 | a | b | c | d |
| 5 | a | b | c | d |
| 6 | a | b | c | d |
| 7 | a | b | c | d |
| 8 | a | b | c | d |

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قسم الرياضيات  
ثانوية المباركية

نموذج (2) اختبار الفترة الدراسية الثالثة للصف الثاني عشر (علمي)

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أولاً الأسئلة المقافية

السؤال الأول :  
(أوجد) a

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$$\begin{aligned} & \int \frac{x+1}{\sqrt[3]{x+1}} dx \\ &= \int \frac{(3\sqrt{x+1})(3\sqrt{x^2} - 3\sqrt{x+1})}{3\sqrt{x+1}} dx \\ &= \int (x^{\frac{2}{3}} - x^{\frac{1}{3}} + 1) dx \\ &= \frac{3}{5}x^{\frac{5}{3}} - \frac{3}{4}x^{\frac{4}{3}} + x + C \\ &= \frac{3}{5}x^{\frac{5}{3}}\sqrt{x^2} - \frac{3}{4}x^{\frac{4}{3}}\sqrt{x} + x + C \end{aligned}$$

أوجد b

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$$\int x(x+1)^5 dx$$

$$\text{نفرض } u = x+1 \quad du = dx$$

$$x = u - 1$$

$$\int (u-1)u^5 du$$

$$\int (u^6 - u^5) du$$

$$\frac{u^7}{7} - \frac{u^6}{6} + C$$

$$\frac{1}{7}(x+1)^7 - \frac{1}{6}(x+1)^6 + C$$

السؤال الثاني:  
أوجد (a)

$\frac{5}{\text{_____}}$

$\frac{10}{\text{_____}}$

$$\int (3 + \sin 2x)^6 \cos 2x \, dx$$

نفرض .....  $u = 3 + \sin 2x$  .....

$$du = 2 \cos 2x \, dx \quad \frac{1}{2} du = \cos 2x \, dx$$

$$\frac{1}{2} \int u^6 \, du = \frac{1}{2} \cdot \frac{u^7}{7} + C$$

$$\frac{1}{14} (3 + \sin 2x)^7 + C$$

$\frac{5}{\text{_____}}$

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أوجد (b)

$$\int x e^{x-5} \, dx$$

$$u = x$$

$$dv = e^{x-5} \, dx$$

$$du = dx$$

$$v = e^{x-5}$$

$$\int u \, dv = uv - \int v \, du$$

$$= x e^{x-5} - \int e^{x-5} \, dx$$

$$= x e^{x-5} - e^{x-5} + C$$

12

6

$$\int \frac{3+x+x^2}{x^3+3x^2} dx \quad \text{اوجد a) } \underline{\text{السؤال الثالث:}}$$

$$x^3 + 3x^2 = x^2(x+3)$$

$$\frac{3+x+x^2}{x^3+3x^2} = \frac{A_1}{x} + \frac{A_2}{x^2} + \frac{A_3}{x+3}$$

$$3+x+x^2 = A_1(x)(x+3) + A_2(x+3) + A_3(x^2)$$

$$x=0 \Rightarrow 3 = 3 \cdot A_2 \quad A_2 = 1$$

$$x=-3 \Rightarrow 9 = 9 \cdot A_3 \quad A_3 = 1$$

$$x=1 \Rightarrow 5 = 4A_1 + 4A_2 + A_3$$

$$5 = 4A_1 + 4 + 1$$

$$0 = 4A_1 \quad A_1 = 0$$

$$\int \frac{3+x+x^2}{x^3+3x^2} dx = \int \frac{1}{x^2} dx + \int \frac{1}{x+3} dx$$

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$$\int_{-1}^3 |x-2| dx$$

اوجد b)

$$\begin{aligned}
 &= \int_{-1}^2 |x-2| dx + \int_2^3 |x-2| dx \\
 &= \int_{-1}^2 (-x+2) dx + \int_2^3 (x-2) dx \\
 &\quad \left[ -\frac{x^2}{2} + 2x \right]_{-1}^2 + \left[ \frac{x^2}{2} - 2x \right]_2^3 \\
 &= [-2+4] - \left[ -\frac{1}{2} - 2 \right] + \left[ \frac{9}{2} - 6 \right] - [2-4] = 5
 \end{aligned}$$

ذاتي الบท� الموشوعية

في البنود من 1 إلى 3 عبارات لكل بند ظلل في ورقة الإجابة  
اذا كانت العبارة صحيحة وظلل **a** اذا كانت العبارة خطأ **b**

$$\int_2^4 f(x)dx + \int_4^2 g(x)dx = 0 \quad (1)$$

$$\int \frac{-6dx}{x^2 + 3x} = -2\ln|x+3| + 2\ln|x| + C \quad (2)$$

$$\int x \sin(\pi x) dx = -\frac{x}{\pi} \cos(\pi x) + \frac{1}{\pi^2} \sin(\pi x) + C \quad (3)$$

في البنود من 4 إلى 8 لكل بند أربعة اختيارات واحدة منها صحيح  
اختر الإجابة ثم ظلل في ورقة الإجابة دائرة الرمز الدال عليها

$$\int \frac{e^x}{e^x - 4} dx = \quad (4)$$

(a)  $-\frac{1}{2}(e^x - 4) + C$       (b)  $\ln|e^x - 4| + C$

(c)  $-\ln|e^x - 4| + C$       (d)  $\frac{1}{2}\ln|e^x - 4| + C$

$$\int \frac{\csc^2 x}{\sqrt[3]{2 + \cot x}} dx = \quad (5)$$

(a)  $\frac{3}{2}(2 + \cot x)^{\frac{2}{3}} + C$       (b)  $-\frac{3}{2}(2 + \cot x)^{\frac{2}{3}} + C$

(c)  $-2\sqrt[3]{2 + \cot x} + C$       (d)  $\frac{4}{3}(2 + \cot x)^{\frac{4}{3}} + C$

،  $F(x)$  ،  $F(-2) = \frac{9}{8}$  ،  $F(x) = \int (x+1)(2x^2 + 4x - 1)dx$  (إذا تساوى)  $\quad (6)$

(a)  $\frac{1}{8}(2x^2 + 4x - 1)^2 + \frac{5}{4}$       (b)  $\frac{1}{8}(2x^2 + 4x - 1)^2 + 1$

(c)  $\frac{1}{4}(2x^2 + 4x - 1)^2 + 1$       (d)  $4(2x^2 + 4x - 1)^2 - 1$

$$\int \left( \frac{x^2 - 4x + 4}{x - 2} + 2 \right)^2 dx = \quad (7)$$

(a)  $x^2 + C$       (b)  $2x + C$

(c)  $\frac{x^2}{2} + 2x + C$       (d)  $\frac{1}{3}x^3 + C$

$$) \int \frac{x^3 + 2}{x^2 - x} dx = \quad (8)$$

(a)  $\frac{x^2}{2} + 3\ln|x-1| + 2\ln|x| + C$       (b)  $\frac{x^2}{2} - x + 3\ln|x-1| + 2\ln|x| + C$

(c)  $\frac{x^2}{2} - 3\ln|x-1| + 2\ln|x| + C$       (d)  $\frac{x^2}{2} + x + 3\ln|x-1| - 2\ln|x| + C$

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إجابات البنود الموضوعية

- |   |                                  |                                  |                                  |                                  |
|---|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| 1 | a                                | <input checked="" type="radio"/> |                                  |                                  |
| 2 | a                                | <input checked="" type="radio"/> |                                  |                                  |
| 3 | <input checked="" type="radio"/> | b                                |                                  |                                  |
| 4 | a                                | <input checked="" type="radio"/> | c                                | d                                |
| 5 | <input checked="" type="radio"/> | b                                | c                                | d                                |
| 6 | a                                | <input checked="" type="radio"/> | c                                | d                                |
| 7 | a                                | b                                | c                                | <input checked="" type="radio"/> |
| 8 | a                                | b                                | <input checked="" type="radio"/> | <input checked="" type="radio"/> |

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قسم الرياضيات  
ثانوية المباركة

نموذج (3) اختبار الفترة الدراسية الثالثة للصف الثاني عشر (علمي)

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أولاً الأسئلة المقافية

السؤال الأول:  
(أوجد a)

$$\int \frac{x^2 - 3x}{\sqrt[3]{x}} dx$$

$$\int \left( \frac{x^2}{x^{\frac{1}{3}}} - \frac{3x}{x^{\frac{1}{3}}} \right) dx$$

$$= \int (x^{\frac{5}{3}} - 3x^{\frac{2}{3}}) dx$$

$$= \frac{3}{8} x^{\frac{8}{3}} - 3 \cdot \frac{3}{5} x^{\frac{5}{3}} + C$$

$$= \frac{3}{8} x^2 \sqrt[3]{x^2} - \frac{9}{5} x^{\frac{5}{3}} + C$$

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أوجد b

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$$\int x^2 \sqrt{x-1} dx$$

$$u = x-1$$

$$du = dx$$

$$x = u+1$$

$$x^2 = u^2 + 2u + 1$$

$$\int (u^2 + 2u + 1) u^{\frac{1}{2}} du = \int (u^{\frac{5}{2}} + 2u^{\frac{3}{2}} + u^{\frac{1}{2}}) du$$

$$= \frac{2}{7} u^{\frac{7}{2}} + 2 \cdot \frac{2}{5} u^{\frac{5}{2}} + \frac{2}{3} u^{\frac{3}{2}} + C$$

$$= \frac{2}{7} (x-1)^{\frac{7}{2}} + \frac{4}{5} (x-1)^{\frac{5}{2}} + \frac{2}{3} (x-1)^{\frac{3}{2}} + C$$

السؤال الثاني:  
أوجد (a)

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$$\int \sec^4 x \tan x dx$$

$$\int \sec x \sec x \tan x dx$$

$$u = \sec x$$

$$du = \sec x \tan x dx$$

$$\int u^3 du$$

$$= \frac{1}{4} u^4 + C$$

$$= \frac{1}{4} \sec^4 x + C$$

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أوجد (a)

$$\int x^2 e^x dx$$

$$u = x^2$$

$$du = 2x dx$$

$$dv = e^x dx$$

$$v = e^x$$

$$\int u dv = uv - \int v du$$

$$= x^2 e^x - 2 \int x e^x dx$$

$$* \int x e^x dx =$$

$$u = x$$

$$du = dx$$

$$dv = e^x dx$$

$$v = e^x$$

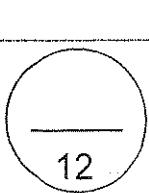
$$\int u dv = uv - \int v du$$

$$= x e^x - \int e^x dx$$

$$= x e^x - e^x + C$$

$$\therefore \int x^2 e^x dx = x^2 e^x - 2 [x e^x - e^x] + C$$

$$= e^x [x^2 - 2x + 2] + C$$



$$\int \frac{x^2 - 5x + 6}{x} dx \quad \text{أوجد a) } \underline{\text{السؤال الثالث:}}$$

$$\int \left( \frac{x^2}{x} - \frac{5x}{x} + \frac{6}{x} \right) dx$$

$$\int \left( x - 5 + \frac{6}{x} \right) dx$$

$$= \frac{x^2}{2} - 5x + 6 \ln|x| + C$$

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$$\int_1^3 \left( 3e^x + \frac{e}{x} \right) dx \quad \text{أوجد b)}$$

$$= \left[ 3e^x + e \ln|x| \right]_1^3$$

$$= [3e^3 + e \ln 3] - [3e + e \ln 1]$$

$$= 3e^3 + e \ln 3 - 3e \quad = \ln 1.20$$

ذانها البنود الموضوعية

في البنود من 1 إلى 3 عبارات لكل بند ظلل في ورقة الإجابة  
اذا كانت العبارة صحيحة وظلل **a** اذا كانت العبارة خطأ **b**

$$f(x) = -\frac{1}{x} + \frac{1}{2}x^2 + \frac{1}{2}, \text{ فإن } f(2) = 1, \quad f'(x) = \frac{1}{x^2} + x \quad (1)$$

$$\int x \sqrt[3]{x+2} dx = \frac{3}{7}(x+2)^{\frac{7}{3}} - \frac{3}{2}(x+2)^{\frac{4}{3}} + C \quad (2)$$

$$(F'(x) = \sec(x)\tan(x), F(0) = 4) \Rightarrow F(x) = \sec x + 3 \quad (3)$$

في البنود من 4 إلى 8 لكل بند أربعة اختيارات واحدة منها صحيحة  
اختر الإجابة ثم ظلل في ورقة الإجابة دائرة الرمز الدال عليها

$$\int \frac{2x+3}{\sqrt{x}} dx = \quad (4)$$

- |  |  |
|--|--|
| <b>a</b> $\frac{3}{4}x^{\frac{3}{2}} + \frac{3}{2}x^{\frac{1}{2}} + C$ | <b>b</b> $\frac{1}{3}x^{\frac{3}{2}} + 6x^{\frac{1}{2}} + C$           |
| <b>c</b> $\frac{4}{3}x^{\frac{3}{2}} + 6x^{\frac{1}{2}} + C$           | <b>d</b> $\frac{4}{3}x^{\frac{3}{2}} + \frac{1}{6}x^{\frac{1}{2}} + C$ |

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$$\text{إذا كانت } e^x = \text{ فإن } \frac{dy}{dx} \text{ يساوي} \quad (5)$$

- |                             |                              |
|-----------------------------|------------------------------|
| <b>a</b> $e^x(x^2 + x - 1)$ | <b>b</b> $e^x(x^2 - x)$      |
| <b>c</b> $2x e^x - e^x$     | <b>d</b> $e^x(x^2 + 2x + 1)$ |

$$\int x^2 \ln(x) dx = \quad (6)$$

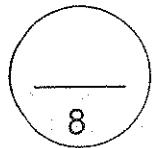
- |  |   |
|--|---|
| <b>a</b> $\frac{1}{3}x^3 \ln(x) - \frac{x^3}{3} + C$ | <b>b</b> $\frac{1}{3}x^3 \ln(x) - \frac{x^3}{9} + C$  |
| <b>c</b> $\frac{1}{3}x^3 \ln(x) + \frac{x^3}{9} + C$ | <b>d</b> $-\frac{1}{3}x^3 \ln(x) - \frac{x^3}{9} + C$ |

$$\int \frac{2x^2 - 4x + 3}{x^2 - 1} dx = \quad (7)$$

- |   |  |
|---|--|
| <b>a</b> $2 + 2 \ln x-1  - \frac{9}{2} \ln x+1  + C$            | <b>b</b> $\frac{1}{2} \ln x-1  - \frac{9}{2} \ln x+1  + C$ |
| <b>c</b> $2x + \frac{1}{2} \ln x-1  - \frac{9}{2} \ln x+1  + C$ | <b>d</b> $x + \frac{1}{2} \ln x-1  - 9 \ln x+1  + C$       |

$$\int_{-1}^1 (1 - |x|) dx = \quad (8)$$

- |            |             |            |                        |
|------------|-------------|------------|------------------------|
| <b>a</b> 1 | <b>b</b> -1 | <b>c</b> 0 | <b>d</b> $\frac{1}{2}$ |
|------------|-------------|------------|------------------------|



إجابات البنود الموضوعية

- |   |   |   |   |   |
|---|---|---|---|---|
| 1 | a | b |   |   |
| 2 | a | b |   |   |
| 3 | a | b |   |   |
| 4 | a | b | c | d |
| 5 | a | b | c | d |
| 6 | a | b | c | d |
| 7 | a | b | c | d |
| 8 | a | b | c | d |

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**نموذج (4) اختبار الفترة الدراسية الثالثة للصف الثاني عشر (علمي)**

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أولاً الأسئلة المقالية

السؤال الأول

$$f(x) = \int x(3x - 2)dx \quad f(0) = 2, \text{ إذا كان } a$$

$f(x)$  أوجد

$$F(x) = \int (3x^2 - 2x) dx$$

$$F(x) = x^3 - x^2 + C$$

$$F(0) = 0 - 0 + C = 2 \Rightarrow C = 2$$

$$F(x) = x^3 - x^2 + 2$$

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$$\int x^5 \sqrt{4-x^2} dx$$

أوجد (b)

$$\text{نفرض } u = 4 - x^2 \quad x^2 = u - 4$$

$$du = -2x dx$$

$$-\frac{1}{2} du = x dx \quad x^4 = u^2 - 8u + 16$$

$$\text{حل} = \int (4-x^2)^{\frac{1}{2}} \cdot x^4 \cdot x dx$$

$$= -\frac{1}{2} \int u^{\frac{1}{2}} (u^2 - 8u + 16) du = -\frac{1}{2} \int (u^{\frac{5}{2}} - 8u^{\frac{3}{2}} + 16u^{\frac{1}{2}}) du$$

$$= -\frac{1}{2} \left[ \frac{2}{7} u^{\frac{7}{2}} - 8 \cdot \frac{2}{5} u^{\frac{5}{2}} + 16 \cdot \frac{2}{3} u^{\frac{3}{2}} \right] + C$$

$$= -\frac{1}{7} (4-x^2)^{\frac{7}{2}} + \frac{16}{5} (4-x^2)^{\frac{5}{2}} - \frac{32}{3} (4-x^2)^{\frac{3}{2}} + C$$

السؤال الثاني  
أوجد (a)

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$$\int (2 \tan x - \csc^2 x) dx$$

$$\dots \int \tan x \, dx \dots$$

$$\int (2 \tan x - \csc^2 x) \, dx \dots$$

$$\int \frac{\sin x}{\cos x} \, dx \dots$$

$$= -\ln |\sec x| + \cot x + C \dots$$

$$u = \cos x \dots du = -\sin x \, dx \dots$$

$$\dots = -\int \frac{du}{u} = -\ln |u| + C \dots$$

$$\dots = -\ln |\cos x| + C \dots$$

$$\dots = \ln |\sec x| + C \dots$$

—  
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$$\int e^x \sin x \, dx \quad \text{أوجد (a)}$$

$$u = e^x \quad dv = \sin x \, dx \\ du = e^x \, dx \quad v = -\cos x$$

$$uv = \int u \, dv = uv - \int v \, du \\ = -e^x \cos x + \int e^x \cos x \, dx$$

$$* \int e^x \cos x \, dx = \\ u = e^x \quad dv = \cos x \, dx \\ du = e^x \, dx \quad v = \sin x$$

$$\int u \, dv = uv - \int v \, du \\ = e^x \sin x - \int e^x \sin x \, dx$$

$$= \int e^x \sin x \, dx = -e^x \cos x + e^x \sin x - \int e^x \sin x \, dx$$

$$2 \int e^x \sin x \, dx = -e^x \cos x + e^x \sin x$$

$$\int e^x \sin x \, dx = -\frac{1}{2} e^x \cos x + \frac{1}{2} e^x \sin x + C$$

12

6

السؤال الثالث : (a) اوجد  $\int \frac{x^2 - 3x + 7}{x^2 - 4x + 4} dx$

$$\begin{aligned} & x^2 - 4x + 4 \quad | \quad x^2 - 3x + 7 \\ & \hline x^2 - 4x + 4 & x^2 - 3x + 7 \\ & \hline & x + 3 \\ \frac{x^2 - 3x + 7}{x^2 - 4x + 4} &= 1 + \frac{x+3}{x^2 - 4x + 4} \quad x^2 - 4x + 4 = (x-2)^2 \\ \frac{x+3}{x^2 - 4x + 4} &= \frac{A_1}{(x-2)} + \frac{A_2}{(x-2)^2} \\ x+3 &= A_1(x-2) + A_2 \\ x=2 \Rightarrow 5 &= A_2 \\ \text{أختصار } x=0 \Rightarrow 3 &= -2A_1 + 5 \quad A_1 = 1 \\ \text{المطلوب} &= \int 1 dx + \int \frac{1}{x^2} dx + \int \frac{5}{(x-2)^2} dx \\ &= x + \ln|x-2| + \frac{-5}{x-2} + C \end{aligned}$$

b) دون حساب قيمة التكامل أثبت أن

$$\int_1^3 (x^2 + 1) dx \geq \int_1^3 (x-1) dx$$

$$f(x) = x^2 + 1 \quad , \quad g(x) = x-1 \quad \text{نفرض}$$

$$P(x) = g(x) = x^2 + 1 - x + 1 \quad [1,3] \quad \text{نحصل على}$$

$$\Delta = x^2 - x + 2 = 0$$

$$\Delta = b^2 - 4ac = 1 - 4(1)(2) = -7$$

$f(x) - g(x) \leq 0$  وعندما  $x \in [1,3]$  لا يتحقق

بالتالي  $f(x) \geq g(x)$

$$f(x) - g(x) \geq 0 \quad \forall x \in \mathbb{R}$$

$$f(x) - g(x) \geq 0 \quad \forall x \in [1,3]$$

$$(x^2 + 1) \geq (x-1) \quad \forall x \in [1,3]$$

$$\int_1^3 (x^2 + 1) dx \geq \int_1^3 (x-1) dx$$

ذاتي البناء الموضوعية

في البنود من 1 إلى 3 عبارات لكل بند ظلل في ورقة الإجابة  
اذا كانت العبارة صحيحة وظلل  a اذا كانت العبارة خطا  b

$$\int x(x^2 - 1)^{10} dx = \frac{1}{18}(x^2 - 1)^9 + C \quad (1)$$

$$(F'(x) = \cos x + \sin x, F(\pi) = 1) \Rightarrow F(x) = \sin x - \cos x \quad (2)$$

$$\int x e^{-x} dx = -x e^{-x} + e^{-x} + C \quad (3)$$

في البنود من 4 إلى 8 لكل بند أربعة اختيارات واحدة منها صحيح  
اختر الإجابة ثم ظلل في ورقة الإجابة دائرة الرمز الدال عليها

$$\int \left( \sqrt[3]{x^2} + \frac{1}{\sqrt[3]{x^2}} \right) dx = \quad (4)$$

- |   |  |
|---|--|
| <input type="radio"/> a $\frac{3}{5} \sqrt[3]{x} (x^{\frac{4}{3}} + 5) + C$ | <input type="radio"/> b $\frac{3}{5} x^{\frac{2}{3}} (x^{-\frac{2}{3}} + 5) + C$ |
| <input type="radio"/> c $\frac{5}{3} \sqrt[3]{x} (x^{\frac{4}{3}} + 5) + C$ | <input type="radio"/> d $\frac{5}{3} x^{\frac{4}{3}} (x^{\frac{2}{3}} + 5) + C$  |

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(5) اذا كانت  $y = (\ln x)^2$ , فإن  $\frac{dy}{dx}$  تساوي:

- |   |   |
|---|---|
| <input type="radio"/> a $\frac{\ln x}{x}$   | <input type="radio"/> b $\frac{2 \ln x}{x}$   |
| <input type="radio"/> c $\frac{x \ln x}{2}$ | <input type="radio"/> d $\frac{2 \ln^2 x}{x}$ |

$$\int_{\sqrt{2}}^{\sqrt{18}} \sqrt{2} dx = \quad (6)$$

- |                           |                                     |                           |                           |
|---------------------------|-------------------------------------|---------------------------|---------------------------|
| <input type="radio"/> a 2 | <input type="radio"/> b $2\sqrt{2}$ | <input type="radio"/> c 4 | <input type="radio"/> d 8 |
|---------------------------|-------------------------------------|---------------------------|---------------------------|

$$\int \frac{6}{x^2 - 9} dx = \quad (7)$$

- |   |   |
|---|---|
| <input type="radio"/> a $\ln x+3  - \ln x-3  + C$ | <input type="radio"/> b $\ln(x-3) - \ln(x+3) + C$ |
| <input type="radio"/> c $\ln x+3  + \ln x-3  + C$ | <input type="radio"/> d $\ln x-3  - \ln x+3  + C$ |

$$\int (2x+1) \sin x dx \quad (8)$$

- |  |   |
|--|---|
| <input type="radio"/> a $(2x+1) \cos x + 2 \sin x + C$ | <input type="radio"/> b $-(2x+1) \cos x + 2 \sin x + C$ |
| <input type="radio"/> c $-(x+1) \cos x - 2 \sin x + C$ | <input type="radio"/> d $(2x+1) \cos x - \sin x + C$    |

8

إجابات البنود الموضوعية

- |   |              |              |              |              |
|---|--------------|--------------|--------------|--------------|
| 1 | a            | <del>b</del> |              |              |
| 2 | <del>a</del> | b            |              |              |
| 3 | a            | <del>b</del> |              |              |
| 4 | <del>a</del> | b            | c            | d            |
| 5 | a            | <del>b</del> | c            | d            |
| 6 | a            | b            | <del>c</del> | d            |
| 7 | a            | b            | c            | <del>d</del> |
| 8 | a            | <del>b</del> | c            | d            |

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نموذج (5) اختبار الفترة الدراسية الثالثة للصف الثاني عشر (علمي)

10

5

أولاً الأسئلة المقالية

السؤال الأول

$$f(x) = \int \frac{x}{x^2} dx \quad (a) \text{ اوجد}$$

$$u = \frac{1}{x} + 5 \quad du = -\frac{1}{x^2} dx$$

$$\int u^5 du = \text{تكامل}$$

$$= -\frac{u^6}{6} + C$$

$$= -\frac{(\frac{1}{x} + 4)^6}{6} + C$$

(b) اوجد

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$$\int (e^{2x} + \frac{3}{x}) dx$$

$$\int e^{2x} dx + \int \frac{3}{x} dx$$

$$= \frac{1}{2} e^{2x} + 3 \ln|x| + C$$

الدورة الـ ٢، الثاني  
أوجد (a)

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$\frac{10}{\text{---}}$

$$\int x \ln x \, dx$$

$$u = \ln x \quad dv = x \, dx$$

$$du = \frac{1}{x} \, dx \quad v = \frac{1}{2} x^2$$

$$\int u \, dv = uv - \int v \, du$$

$$= \frac{1}{2} x^2 \ln x - \int \frac{1}{2} x^2 \cdot \frac{1}{x} \, dx$$

$$= \frac{1}{2} x^2 \ln x - \frac{1}{2} \int x \, dx$$

$$= \frac{1}{2} x^2 \ln x - \frac{1}{4} x^2 + C$$

$\frac{5}{\text{---}}$

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أوجد (a)

$$u = \tan x$$

$$du = \sec^2 x \, dx$$

$$\int u^{\frac{1}{2}} \, du$$

$$= \frac{2}{3} u^{\frac{3}{2}} + C$$

$$= \frac{2}{3} (\tan x)^{\frac{3}{2}} + C$$

12

6

السؤال الثالث: (a) أوجد  $\int \frac{x^3 - 2}{x^2 + x} dx$

$$\frac{x^3 - 2}{x^2 + x} = (x-1) + \frac{x-2}{x^2+x}$$

$$\frac{x-2}{x^2+x} = \frac{A_1}{x} + \frac{A_2}{x+1}$$

$$x-2 = A_1(x+1) + A_2(x)$$

$$x=0 \Rightarrow -2 = A_1$$

$$x=-1 \Rightarrow -3 = -A_2 \quad A_2 = 3$$

$$\int \frac{x^3 - 2}{x^2 + x} dx = \int (x-1) dx + \int \frac{-2}{x} dx + \int \frac{3}{x+1} dx$$

$$= \frac{x^2}{2} - x - 2 \ln|x| + 3 \ln|x+1| + C$$

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$$\int_0^3 x\sqrt{x+1} dx$$

(b) دون حساب قيمة التكامل أثبت أن

$$u = x+1$$

$$x = u-1$$

$$= \int_1^4 (u-1) u^{\frac{1}{2}} du$$

$$= \int_1^4 (u^{\frac{3}{2}} - u^{\frac{1}{2}}) du$$

$$= \left[ \frac{2}{5} u^{\frac{5}{2}} - \frac{2}{3} u^{\frac{3}{2}} \right]_1^4$$

$$x=3 \quad u=4$$

$$x=0 \quad u=1$$

$$= \frac{2}{5} (4)^{\frac{5}{2}} - \frac{2}{3} (4)^{\frac{3}{2}} - \left[ \frac{2}{5} - \frac{2}{3} \right]$$

$$= \frac{116}{75}$$

هادئاً البنود الموضوعية

في البنود من 1 إلى 3 عبارات لكل بند ظلل في ورقة الإجابة  
 a) إذا كانت العبارة صحيحة وظلل b) إذا كانت العبارة خطأ

(b) إذا كانت:  $F(x) = x^3 + 6x^2 + 15x + 400$ , فإن  $F(x) = \int (3x^2 - 12x + 15)dx$ ,  $F(0) = 400$  (1)

(a)  $\int (x+1)^3 \sqrt{x^2+2x+3} dx = \frac{3}{8} \sqrt[3]{(x^2+2x+3)^4} + C$  (2)

(b) إذا كانت:  $g'(x) = \frac{1}{2x+2}$ ,  $g(x) = \ln(2x+2)$  (3)

في البنود من 4 إلى 8 لكل بند أربعة اختيارات واحدة منها صحيح  
 اختر الإجابة ثم ظلل في ورقة الإجابة دائرة الرمز الدال عليها

$\int (2x+1) \sin x dx$  (4)

- (a)  $(2x+1) \cos x + 2 \sin x + C$   
 (b)  $-(2x+1) \cos x + 2 \sin x + C$   
 (c)  $-(x+1) \cos x - 2 \sin x + C$   
 (d)  $(2x+1) \cos x - \sin x + C$

$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} (\sin x + \cos x) dx =$  www.kwedufiles.com (5)

- (a) 4 (b) 2 (c) 0 (d)  $\pi$

$\int \frac{7x-7}{x^2-3x-10} dx =$  (6)

- (a)  $4 \ln|x+2| + 3 \ln|x-5| + C$   
 (b)  $3 \ln|x+2| + 2 \ln|x-5| + C$   
 (c) ~~4~~  $4 \ln|x-5| + 3 \ln|x+2| + C$   
 (d)  $4 \ln|x-5| - 3 \ln|x+2| + C$

$\int \frac{e^x}{e^x-4} dx =$  (7)

- (a)  $-\frac{1}{2}(e^x - 4) + C$   
 (b)  $\ln|e^x - 4| + C$   
 (c)  $-\ln|e^x - 4| + C$   
 (d)  $\frac{1}{2} \ln|e^x - 4| + C$

$\int \frac{\sin(4x)}{\cos^5(4x)} dx =$  (8)

- (a)  $-\frac{1}{16} \cos^{-4}(4x) + C$   
 (b)  $\frac{1}{16} \cos^{-4}(4x) + C$   
 (c)  $-\cos^{-4}(4x) + C$   
 (d)  $\cos^{-4}(4x) + C$

نموذج 6 اختبار الفترة الدراسية الثالثة للصف الثاني عشر (علمي)

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أولاً الأسئلة المقالية

السؤال الأول :  
أوجد (a)

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$$\int (x+2)\sqrt{x^2 + 4x - 5} \, dx$$

$$..... u = x^2 + 4x - 5 ..... du = (2x+4)dx$$

$$\frac{1}{2} du = (x+2)dx$$

$$= \frac{1}{2} \int u^{\frac{1}{2}} du$$

$$= \frac{1}{2} \cdot \frac{2}{3} u^{\frac{3}{2}} + C$$

$$= \frac{1}{3} (x^2 + 4x - 5) + C$$

أوجد (b)

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$$\int \sec x (\sec x + \tan x) dx$$

$$\int [\sec^2 x + \sec x \tan x] dx$$

$$= \tan x + \sec x + C$$

السؤال الثاني :  
أوجد (a)

$$\int (2x+1) \ln(x+1) dx$$

$$u = \ln(x+1) \quad dv = (2x+1) dx$$

$$du = \frac{1}{x+1} dx \quad v = x^2 + x = x(x+1)$$

$$\int u dv = uv - \int v du$$

$$= (x^2 + x) \ln(x+1) - \int x(x+1) \cdot \frac{1}{x+1} dx$$

$$= (x^2 + x) \ln(x+1) - \int x dx$$

$$= (x^2 + x) \ln(x+1) - \frac{x^2}{2} + C$$

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أوجد (b)

$$\int \frac{4x-6}{x^2-3x+5} dx$$

$$u = x^2 - 3x + 5$$

$$du = (2x-3) dx$$

$$2du = (4x-6) dx$$

$$= 2 \int \frac{du}{u}$$

$$= 2 \ln|u| + C$$

$$= 2 \ln|x^2 - 3x + 5| + C$$

12

6

$$f(x) = \frac{-x+10}{x^2+x-12} \quad (a)$$

السؤال الثالث:

$$\int f(x) dx$$

$$x^2 + x - 12 = (x-3)(x+4)$$

$$\frac{-x+10}{x^2+x-12} = \frac{A_1}{x-3} + \frac{A_2}{x+4}$$

$$-x+10 = A_1(x+4) + A_2(x-3)$$

$$x=3 \Rightarrow -7 = 7A_1 \Rightarrow A_1 = -1$$

$$x=-4 \Rightarrow 14 = -7A_2 \Rightarrow A_2 = -2$$

$$\int \frac{-x+10}{x^2+x-12} dx = \int \frac{1}{x-3} dx + \int \frac{-2}{x+4} dx$$

$$= \ln|x-3| - 2\ln|x+4| + C$$

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$\frac{\pi}{4}$

$$\int_0^{\frac{\pi}{4}} \tan x \sec^2 x dx$$

أوجد b

$$\text{لدي } u = \tan x$$

$$x = \frac{\pi}{4} \Rightarrow u = 1$$

$$du = \sec^2 x dx \quad x=0 \Rightarrow u=0$$

$$\int u du$$

$$= \left[ \frac{1}{2} u^2 \right]_0^1$$

$$= \left[ \frac{1}{2} \right] - [0] = \frac{1}{2}$$

أناها البنود الموضوعية

في البنود من 1 إلى 3 عبارات لكل بند ظلل في ورقة الإجابة  
إذا كانت العبارة صحيحة وظلل **(b)** إذا كانت العبارة خطأ **(a)**

$$\int k f(x) dx = k \int f(x) dx, k \in R \quad (b) \quad (1)$$

إذا كانت المدالة  $f(x) = [x^2 - 4]$  مسماة على  $[2, 4]$  فإن **(a)** إذا كانت العبارة صحيحة وظلل **(b)** إذا كانت العبارة خطأ **(c)**  $\int_2^4 f(x) dx + \int_4^2 f(x) dx = 0$  **(d)**  $\int_{-1}^1 (|x|^3) dx = -\frac{1}{2}$  **(e)**  $\int_{-1}^1 (|x|^3) dx = \frac{1}{2}$  **(f)**  $\int_{-1}^1 (|x|^3) dx = 0$  **(g)**  $\int_{-1}^1 (|x|^3) dx = 1$  **(h)**  $\int_{-1}^1 (|x|^3) dx = 2$  **(i)**  $\int_{-1}^1 (|x|^3) dx = 4$  **(j)**  $\int_{-1}^1 (|x|^3) dx = 8$  **(k)**  $\int_{-1}^1 (|x|^3) dx = 16$  **(l)**  $\int_{-1}^1 (|x|^3) dx = 32$  **(m)**  $\int_{-1}^1 (|x|^3) dx = 64$  **(n)**  $\int_{-1}^1 (|x|^3) dx = 128$  **(o)**  $\int_{-1}^1 (|x|^3) dx = 256$  **(p)**  $\int_{-1}^1 (|x|^3) dx = 512$  **(q)**  $\int_{-1}^1 (|x|^3) dx = 1024$  **(r)**  $\int_{-1}^1 (|x|^3) dx = 2048$  **(s)**  $\int_{-1}^1 (|x|^3) dx = 4096$  **(t)**  $\int_{-1}^1 (|x|^3) dx = 8192$  **(u)**  $\int_{-1}^1 (|x|^3) dx = 16384$  **(v)**  $\int_{-1}^1 (|x|^3) dx = 32768$  **(w)**  $\int_{-1}^1 (|x|^3) dx = 65536$  **(x)**  $\int_{-1}^1 (|x|^3) dx = 131072$  **(y)**  $\int_{-1}^1 (|x|^3) dx = 262144$  **(z)**  $\int_{-1}^1 (|x|^3) dx = 524288$  **(aa)**  $\int_{-1}^1 (|x|^3) dx = 1048576$  **(bb)**  $\int_{-1}^1 (|x|^3) dx = 2097152$  **(cc)**  $\int_{-1}^1 (|x|^3) dx = 4194304$  **(dd)**  $\int_{-1}^1 (|x|^3) dx = 8388608$  **(ee)**  $\int_{-1}^1 (|x|^3) dx = 16777216$  **(ff)**  $\int_{-1}^1 (|x|^3) dx = 33554432$  **(gg)**  $\int_{-1}^1 (|x|^3) dx = 67108864$  **(hh)**  $\int_{-1}^1 (|x|^3) dx = 134217728$  **(ii)**  $\int_{-1}^1 (|x|^3) dx = 268435456$  **(jj)**  $\int_{-1}^1 (|x|^3) dx = 536870912$  **(kk)**  $\int_{-1}^1 (|x|^3) dx = 1073741824$  **(ll)**  $\int_{-1}^1 (|x|^3) dx = 2147483648$  **(mm)**  $\int_{-1}^1 (|x|^3) dx = 4294967296$  **(nn)**  $\int_{-1}^1 (|x|^3) dx = 8589934592$  **(oo)**  $\int_{-1}^1 (|x|^3) dx = 17179869184$  **(pp)**  $\int_{-1}^1 (|x|^3) dx = 34359738368$  **(qq)**  $\int_{-1}^1 (|x|^3) dx = 68719476736$  **(rr)**  $\int_{-1}^1 (|x|^3) dx = 137438953472$  **(tt)**  $\int_{-1}^1 (|x|^3) dx = 274877906944$  **(uu)**  $\int_{-1}^1 (|x|^3) dx = 549755813888$  **(vv)**  $\int_{-1}^1 (|x|^3) dx = 1099511627776$  **(ww)**  $\int_{-1}^1 (|x|^3) dx = 2199023255552$  **(xx)**  $\int_{-1}^1 (|x|^3) dx = 4398046511104$  **(yy)**  $\int_{-1}^1 (|x|^3) dx = 8796093022208$  **(zz)**  $\int_{-1}^1 (|x|^3) dx = 17592186044416$  **(aa)**  $\int_{-1}^1 (|x|^3) dx = 35184372088832$  **(bb)**  $\int_{-1}^1 (|x|^3) dx = 70368744177664$  **(cc)**  $\int_{-1}^1 (|x|^3) dx = 140737488355328$  **(dd)**  $\int_{-1}^1 (|x|^3) dx = 281474976710656$  **(ee)**  $\int_{-1}^1 (|x|^3) dx = 562949953421312$  **(ff)**  $\int_{-1}^1 (|x|^3) dx = 1125899906842624$  **(gg)**  $\int_{-1}^1 (|x|^3) dx = 2251799813685248$  **(hh)**  $\int_{-1}^1 (|x|^3) dx = 4503599627370496$  **(ii)**  $\int_{-1}^1 (|x|^3) dx = 9007199254740992$  **(jj)**  $\int_{-1}^1 (|x|^3) dx = 18014398509481984$  **(kk)**  $\int_{-1}^1 (|x|^3) dx = 36028797018963968$  **(ll)**  $\int_{-1}^1 (|x|^3) dx = 72057594037927936$  **(mm)**  $\int_{-1}^1 (|x|^3) dx = 144115188075855872$  **(nn)**  $\int_{-1}^1 (|x|^3) dx = 288230376151711744$  **(oo)**  $\int_{-1}^1 (|x|^3) dx = 576460752303423488$  **(pp)**  $\int_{-1}^1 (|x|^3) dx = 1152921504606846976$  **(qq)**  $\int_{-1}^1 (|x|^3) dx = 2305843009213693952$  **(rr)**  $\int_{-1}^1 (|x|^3) dx = 4611686018427387904$  **(xx)**  $\int_{-1}^1 (|x|^3) dx = 9223372036854775808$  **(yy)**  $\int_{-1}^1 (|x|^3) dx = 18446744073709551616$  **(zz)**  $\int_{-1}^1 (|x|^3) dx = 36893488147419103232$  **(aa)**  $\int_{-1}^1 (|x|^3) dx = 73786976294838206464$  **(bb)**  $\int_{-1}^1 (|x|^3) dx = 147573952589676412928$  **(cc)**  $\int_{-1}^1 (|x|^3) dx = 295147905179352825856$  **(dd)**  $\int_{-1}^1 (|x|^3) dx = 590295810358705651712$  **(ee)**  $\int_{-1}^1 (|x|^3) dx = 1180591620717411303424$  **(ff)**  $\int_{-1}^1 (|x|^3) dx = 2361183241434822606848$  **(gg)**  $\int_{-1}^1 (|x|^3) dx = 4722366482869645213696$  **(hh)**  $\int_{-1}^1 (|x|^3) dx = 9444732965739290427392$  **(ii)**  $\int_{-1}^1 (|x|^3) dx = 18889465931478580854784$  **(jj)**  $\int_{-1}^1 (|x|^3) dx = 37778931862957161709568$  **(kk)**  $\int_{-1}^1 (|x|^3) dx = 75557863725914323419136$  **(ll)**  $\int_{-1}^1 (|x|^3) dx = 151115727458228646838272$  **(mm)**  $\int_{-1}^1 (|x|^3) dx = 302231454916457293676544$  **(nn)**  $\int_{-1}^1 (|x|^3) dx = 604462909832914587353088$  **(oo)**  $\int_{-1}^1 (|x|^3) dx = 1208925819665829174706176$  **(pp)**  $\int_{-1}^1 (|x|^3) dx = 241785163933165834941232$  **(qq)**  $\int_{-1}^1 (|x|^3) dx = 483570327866331669882464$  **(rr)**  $\int_{-1}^1 (|x|^3) dx = 967140655732663339764928$  **(xx)**  $\int_{-1}^1 (|x|^3) dx = 1934281311465326679529856$  **(yy)**  $\int_{-1}^1 (|x|^3) dx = 3868562622930653359059712$  **(zz)**  $\int_{-1}^1 (|x|^3) dx = 7737125245861306718119424$  **(aa)**  $\int_{-1}^1 (|x|^3) dx = 1547425049172261343623888$  **(bb)**  $\int_{-1}^1 (|x|^3) dx = 3094850098344522687247776$  **(cc)**  $\int_{-1}^1 (|x|^3) dx = 618970019668904537449552$  **(dd)**  $\int_{-1}^1 (|x|^3) dx = 1237940039337809074899104$  **(ee)**  $\int_{-1}^1 (|x|^3) dx = 2475880078675618149798208$  **(ff)**  $\int_{-1}^1 (|x|^3) dx = 4951760157351236299596416$  **(gg)**  $\int_{-1}^1 (|x|^3) dx = 9903520314702472599192832$  **(hh)**  $\int_{-1}^1 (|x|^3) dx = 19807040629404945198385664$  **(ii)**  $\int_{-1}^1 (|x|^3) dx = 39614081258809890396771328$  **(jj)**  $\int_{-1}^1 (|x|^3) dx = 79228162517619780793542656$  **(kk)**  $\int_{-1}^1 (|x|^3) dx = 15845632503523956158708512$  **(ll)**  $\int_{-1}^1 (|x|^3) dx = 31691265007047912317417024$  **(mm)**  $\int_{-1}^1 (|x|^3) dx = 63382530014095824634834048$  **(nn)**  $\int_{-1}^1 (|x|^3) dx = 126765060028191649269668096$  **(oo)**  $\int_{-1}^1 (|x|^3) dx = 253530120056383298539336192$  **(pp)**  $\int_{-1}^1 (|x|^3) dx = 507060240112766597078672384$  **(qq)**  $\int_{-1}^1 (|x|^3) dx = 1014120480245331194157344768$  **(rr)**  $\int_{-1}^1 (|x|^3) dx = 2028240960490662388314689536$  **(xx)**  $\int_{-1}^1 (|x|^3) dx = 4056481920981324776629379072$  **(yy)**  $\int_{-1}^1 (|x|^3) dx = 8112963841962649553258758144$  **(zz)**  $\int_{-1}^1 (|x|^3) dx = 16225927683925299106517516288$  **(aa)**  $\int_{-1}^1 (|x|^3) dx = 32451855367850598213035032576$  **(bb)**  $\int_{-1}^1 (|x|^3) dx = 64903710735701196426070065152$  **(cc)**  $\int_{-1}^1 (|x|^3) dx = 129807421471402392852140130304$  **(dd)**  $\int_{-1}^1 (|x|^3) dx = 259614842942804785704280260608$  **(ee)**  $\int_{-1}^1 (|x|^3) dx = 519229685885609571408560521216$  **(ff)**  $\int_{-1}^1 (|x|^3) dx = 1038459371771219142817121042432$  **(gg)**  $\int_{-1}^1 (|x|^3) dx = 2076918743542438285634242084864$  **(hh)**  $\int_{-1}^1 (|x|^3) dx = 4153837487084876571268484169728$  **(ii)**  $\int_{-1}^1 (|x|^3) dx = 8307674974169753142536968339456$  **(jj)**  $\int_{-1}^1 (|x|^3) dx = 16615349948339506285073936678912$  **(kk)**  $\int_{-1}^1 (|x|^3) dx = 33230699896679012570147873357824$  **(ll)**  $\int_{-1}^1 (|x|^3) dx = 66461399793358025140295746715648$  **(mm)**  $\int_{-1}^1 (|x|^3) dx = 132922799586716050280591493431296$  **(nn)**  $\int_{-1}^1 (|x|^3) dx = 265845599173432100561182986862592$  **(oo)**  $\int_{-1}^1 (|x|^3) dx = 531691198346864201122365973725184$  **(pp)**  $\int_{-1}^1 (|x|^3) dx = 1063382396693728402244731947450368$  **(qq)**  $\int_{-1}^1 (|x|^3) dx = 2126764793387456804489463894900736$  **(rr)**  $\int_{-1}^1 (|x|^3) dx = 4253529586774913608978927789801472$  **(xx)**  $\int_{-1}^1 (|x|^3) dx = 8507059173549827217957855579602944$  **(yy)**  $\int_{-1}^1 (|x|^3) dx = 1701411834709965443591571115920588$  **(zz)**  $\int_{-1}^1 (|x|^3) dx = 3402823669419930887183142231841176$  **(aa)**  $\int_{-1}^1 (|x|^3) dx = 6805647338839861774366284463682352$  **(bb)**  $\int_{-1}^1 (|x|^3) dx = 13611294677679723548732568927364704$  **(cc)**  $\int_{-1}^1 (|x|^3) dx = 27222589355359447097465137854729408$  **(dd)**  $\int_{-1}^1 (|x|^3) dx = 54445178710718894194930275709458816$  **(ee)**  $\int_{-1}^1 (|x|^3) dx = 108890357421437788389860551418177632$  **(ff)**  $\int_{-1}^1 (|x|^3) dx = 217780714842875576779721102836355264$  **(gg)**  $\int_{-1}^1 (|x|^3) dx = 435561429685751153559442205672710528$  **(hh)**  $\int_{-1}^1 (|x|^3) dx = 871122859371502307118884411345421056$  **(ii)**  $\int_{-1}^1 (|x|^3) dx = 1742245718743004614237768822685842112$  **(jj)**  $\int_{-1}^1 (|x|^3) dx = 3484491437486009228475537645371684224$  **(kk)**  $\int_{-1}^1 (|x|^3) dx = 6968982874972018456951075290743368448$  **(ll)**  $\int_{-1}^1 (|x|^3) dx = 1393796574994403691385215058148673696$  **(mm)**  $\int_{-1}^1 (|x|^3) dx = 2787593149988807382770430116297347392$  **(nn)**  $\int_{-1}^1 (|x|^3) dx = 5575186299977614765540860232594689584$  **(oo)**  $\int_{-1}^1 (|x|^3) dx = 11150372599955229531081720465189379168$  **(pp)**  $\int_{-1}^1 (|x|^3) dx = 22300745199910459062163440930378758336$  **(qq)**  $\int_{-1}^1 (|x|^3) dx = 4460149039982081812432688186075751672$  **(rr)**  $\int_{-1}^1 (|x|^3) dx = 8920298079964163624865376372151503344$  **(xx)**  $\int_{-1}^1 (|x|^3) dx = 17840596159928327249730732744303006688$  **(yy)**  $\int_{-1}^1 (|x|^3) dx = 35681192319856654499461465488606013376$  **(zz)**  $\int_{-1}^1 (|x|^3) dx = 71362384639713308998922930977212026752$  **(aa)**  $\int_{-1}^1 (|x|^3) dx = 142724769279426617997845861954424053504$  **(bb)**  $\int_{-1}^1 (|x|^3) dx = 285449538558853235995691723908848107008$  **(cc)**  $\int_{-1}^1 (|x|^3) dx = 570898577117706471991383447817696214016$  **(dd)**  $\int_{-1}^1 (|x|^3) dx = 1141797154235412943982766896353392428032$  **(ee)**  $\int_{-1}^1 (|x|^3) dx = 2283594308470825887965533792706784856064$  **(ff)**  $\int_{-1}^1 (|x|^3) dx = 4567188616941651775931067585413569712128$  **(gg)**  $\int_{-1}^1 (|x|^3) dx = 9134377233883303551862135170827139424256$  **(hh)**  $\int_{-1}^1 (|x|^3) dx = 18268754467766607103724270341654278848512$  **(ii)**  $\int_{-1}^1 (|x|^3) dx = 3653750893553321420744854068330855769024$  **(jj)**  $\int_{-1}^1 (|x|^3) dx = 7307501787066642841489708136661711538048$  **(kk)**  $\int_{-1}^1 (|x|^3) dx = 1461500357413328568297941627332342316096$  **(ll)**  $\int_{-1}^1 (|x|^3) dx = 2923000714826657136595883254664684632192$  **(mm)**  $\int_{-1}^1 (|x|^3) dx = 5846001429653314273191766509329369264384$  **(nn)**  $\int_{-1}^1 (|x|^3) dx = 11692002859306628546383533018658738528768$  **(oo)**  $\int_{-1}^1 (|x|^3) dx = 23384005718613257092767066037317477057536$  **(pp)**  $\int_{-1}^1 (|x|^3) dx = 46768011437226514185534132074634954115072$  **(qq)**  $\int_{-1}^1 (|x|^3) dx = 93536022874453028371068264149269908230144$  **(rr)**  $\int_{-1}^1 (|x|^3) dx = 187072045748906056742136528298539816460288$  **(xx)**  $\int_{-1}^1 (|x|^3) dx = 374144091497812113484273056597079632920576$  **(yy)**  $\int_{-1}^1 (|x|^3) dx = 748288182995624226968546113194159265841152$  **(zz)**  $\int_{-1}^1 (|x|^3) dx = 149657636599124845393709227318839813168224$  **(aa)**  $\int_{-1}^1 (|x|^3) dx = 29931527319824969078741845463767962633648$  **(bb)**  $\int_{-1}^1 (|x|^3) dx = 59863054639649938157483690927535925267296$  **(cc)**  $\int_{-1}^1 (|x|^3) dx = 11972610927929967631496738185507185053584$  **(dd)**  $\int_{-1}^1 (|x|^3) dx = 23945221855859935262973476371014370057168$  **(ee)**  $\int_{-1}^1 (|x|^3) dx = 47890443711719870525946852742028740114336$  **(ff)**  $\int_{-1}^1 (|x|^3) dx = 95780887423439741051893705484057480228672$  **(gg)**  $\int_{-1}^1 (|x|^3) dx = 191561774846879482103787410968114960457344$  **(hh)**  $\int_{-1}^1 (|x|^3) dx = 383123549693758964207574821936229920914688$  **(ii)**  $\int_{-1}^1 (|x|^3) dx = 766247099387517928415149643872459841829376$  **(jj)**  $\int_{-1}^1 (|x|^3) dx = 1532494198775035856830299287744919683658752$  **(kk)**  $\int_{-1}^1 (|x|^3) dx = 3064988397550071713660598575489839367317504$  **(ll)**  $\int_{-1}^1 (|x|^3) dx = 6129976795100143427321197150979678734635008$  **(mm)**  $\int_{-1}^1 (|x|^3) dx = 12259953590200286854642394301959357469270016$  **(nn)**  $\int_{-1}^1 (|x|^3) dx = 24519907180400573709284788603898714938540032$  **(oo)**  $\int_{-1}^1 (|x|^3) dx = 49039814360801147418569577207797429877080064$  **(pp)**  $\int_{-1}^1 (|x|^3) dx = 98079628721602294837139154415594859754160128$  **(qq)**  $\int_{-1}^1 (|x|^3) dx = 19615925744320458967427830883118971950832024$  **(rr)**  $\int_{-1}^1 (|x|^3) dx = 39231851488640917934855661766237943901664048$  **(xx)**  $\int_{-1}^1 (|x|^3) dx = 7846370297728183586971132353247588780332896$  **(yy)**  $\int_{-1}^1 (|x|^3) dx = 15692740595456367173942264706495177606665792$  **(zz)**  $\int_{-1}^1 (|x|^3) dx = 31385481190912734347884529412990355213331584$  **(aa)**  $\int_{-1}^1 (|x|^3) dx = 6277096238182546869576905882598070542667168$  **(bb)**  $\int_{-1}^1 (|x|^3) dx = 12554192476365093739153811765196141085334336$  **(cc)**  $\int_{-1}^1 (|x|^3) dx = 25108384952730187478307623530392282170668672$  **(dd)** <