

لاي محاسبة

المركبات Group (A)

$$\textcircled{1} f(x) = x^2 + x + 1$$

المركبات حسب لتعريف

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{(x+\Delta x) - f(x)}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{(x+\Delta x)^2 + (x+\Delta x) + 1 - (x^2 + x + 1)}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{x^2 + 2x\Delta x + \Delta x^2 + x + \Delta x + 1 - x^2 - x - 1}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{2x\Delta x + \Delta x^2 + \Delta x}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{\Delta x(2x + \Delta x + 1)}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} 2x + \Delta x + 1$$

$$f'(x) = 2x + 1$$

$$\textcircled{2} f(x) = (x+2)^2 - 2 \Rightarrow f(x) = x^2 + 4x + 4 - 2$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{(x+\Delta x)^2 + 4(x+\Delta x) + 2 - x^2 - 4x - 2}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{x^2 + 2x\Delta x + \Delta x^2 + 4x + 4\Delta x + 2 - x^2 - 4x - 2}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{\Delta x(2x + \Delta x + 4)}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} 2x + \Delta x + 4 \Rightarrow f'(x) = 2x + 4$$

$$\textcircled{1} f(x) = x^2 - 1$$

في الدوال لربطية

$$f(x_1) = f(x_2) \Rightarrow x_1^2 - 1 = x_2^2 - 1$$

إضافة (+) للوفين

$$x_1^2 = x_2^2$$

بقي جذر التربيعين للوفين

$$\sqrt{x_1^2} = \sqrt{x_2^2} \Rightarrow x_1 = \pm x_2 \text{ The fun. is } (1-1)$$

$$\textcircled{2} f(x) = \frac{2x+4}{x-2} \Rightarrow f(x_1) = f(x_2)$$

$$\frac{2x_1+4}{x_1-2} = \frac{2x_2+4}{x_2-2}$$

الوفين في لربطية

$$(2x_2+4)(x_1-2) = (2x_1+4)(x_2-2)$$

$$2x_1x_2 - 4x_2 + 4x_1 - 8 = 2x_1x_2 - 4x_1 + 4x_2 - 8$$

$$\cancel{2x_1x_2} - 4x_2 + 4x_1 - 8 - \cancel{2x_1x_2} + 4x_1 - 4x_2 + 8 = 0$$

$$8x_1 - 8x_2 = 0$$

$$8x_1 = 8x_2$$

نقسم بالـ (8)

$$! \quad x_1 = x_2 \text{ The fun. is } (1-1)$$

$$\textcircled{1} \int x^4 \left( \frac{1}{x} - 3x^2 - x^{-4} \right) dx \quad \text{المطلوب 1/0}$$

$$\int \left( \frac{x^4}{x} - 3x^6 - 1 \right) dx$$

$$\int x^3 dx - 3 \int x^6 dx - \int dx$$

$$\frac{x^4}{4} - 3 \frac{x^7}{7} - x + C$$

$$\textcircled{2} \int 3x e^{3x^2-5} dx$$

(6x) ~~...~~

$$\frac{\textcircled{2}}{2} \int 3x e^{3x^2-5} dx$$

$$\frac{1}{2} \int 6x e^{3x^2-5} dx$$

$$\frac{1}{2} e^{3x^2-5} + C$$



$$f(x) = 7x^2$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{f(x+\Delta x) - f(x)}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{7(x+\Delta x)^2 - 7x^2}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{7(x^2 + 2x\Delta x + \Delta x^2) - 7x^2}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{7x^2 + 14x\Delta x + 7\Delta x^2 - 7x^2}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{14x\Delta x + 7\Delta x^2}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{\Delta x(14x + 7\Delta x)}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} 14x + 7\Delta x$$

$$f'(x) = 14x$$

$$\textcircled{2} f(x) = (x+2)^2 - 2$$

منطقه حسب التعريف

$$f(x) = x^2 + 4x + 4 - 2$$

$$f(x) = x^2 + 4x + 2$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{f(x+\Delta x) - f(x)}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{(x+\Delta x)^2 + 4(x+\Delta x) + 2 - (x^2 + 4x + 2)}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{x^2 + 2x\Delta x + \Delta x^2 + 4x + 4\Delta x + 2 - x^2 - 4x - 2}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{2x\Delta x + \Delta x^2 + 4\Delta x}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{\Delta x (2x + \Delta x + 4)}{\Delta x}$$

$$f'(x) = \lim_{\Delta x \rightarrow 0} 2x + \Delta x + 4$$

$$f'(x) = 2x + 4$$

$$\textcircled{1} f(x) = 3 + 7x$$

الدوال الخطية

$$f(x_1) = f(x_2)$$

$$3 + 7x_1 = 3 + 7x_2$$

بإضافة (-3) للطرفين

$$7x_1 = 7x_2$$

نقسم على (7)

$$x_1 = x_2 \quad \text{The fun. is (1-1)}$$

$$\textcircled{2} f(x) = \frac{2x-1}{x-2}$$

$$f(x_1) = f(x_2)$$

$$\frac{2x_1-1}{x_1-2} = \frac{2x_2-1}{x_2-2}$$

الطرفين في لوسطين

$$(2x_2-1)(x_1-2) = (2x_1-1)(x_2-2)$$

$$2x_1x_2 - 4x_2 - x_1 + 2 = 2x_1x_2 - 4x_1 - x_2 + 2$$

$$\cancel{2x_1x_2} - \cancel{4x_2} - \cancel{x_1} + \cancel{2} - \cancel{2x_1x_2} + \cancel{4x_1} + \cancel{x_2} - \cancel{2} = 0$$

$$3x_1 - 3x_2 = 0$$

$$3x_1 = 3x_2$$

نقسم على (3)

$$x_1 = x_2 \quad \text{The fun. is (1-1)}$$

$$\textcircled{1} \int 3x e^{3x^2} dx \quad (6x) \text{ متقاربه لـ } (6x) \text{ لـ } \int u \cdot v'$$

$$\textcircled{2} \int 3x e^{3x^2} dx$$

$$\frac{1}{2} \int 6x e^{3x^2} dx$$

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

$$\textcircled{2} \int \frac{x-1}{2x^2-4x} dx \quad (4x-4) \text{ متقاربه لـ } (4x-4)$$

$$\textcircled{4} \int \frac{4x-4}{2x^2-4x} dx$$

$$\frac{1}{4} \int \frac{4x-4}{2x^2-4x} dx$$

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