

KALKULUA – MINTEGIETAKO 3. KONTROLA (A eredua)

IZEN-ABIZENAK:

TALDEA:

1.- Kalkulatu hurrengo funtzioen deribatuak:

(2 puntu)

$$a) f(x) = \frac{1}{\sqrt{x^5 + 2x}} \Rightarrow f'(x) = -\frac{5x^4 + 2}{2(x^5 + 2x)\sqrt{x^5 + 2x}}$$

$$b) f(x) = \cos^2(5x) \Rightarrow f'(x) = -10\cos(5x)\sin(5x)$$

$$c) f(x) = \sqrt{\tan(e^{2x})} \Rightarrow f'(x) = \frac{e^{2x}}{\cos^2(e^{2x}) \cdot \sqrt{\tan(e^{2x})}}$$

$$d) f(x) = \sin^5(3x^2 - 5x^3) \Rightarrow f'(x) = 5(6x - 15x^2) \cdot \sin^4(3x^2 - 5x^3) \cdot \cos(3x^2 - 5x^3)$$

2.- Kalkulatu hurrengo funtzioen integralak:

(2 puntu)

$$a) \int 2x \cdot \sqrt{3 + x^2} dx = \frac{2}{3}(3 + x^2)^{3/2} + k$$

$$b) \int \sin^3 x \cdot \cos x dx = \frac{\sin^4 x}{4} + k$$

$$c) \int \frac{dx}{\sqrt{1 - 25x^2}} = \frac{1}{5} \arcsin(5x) + k$$

$$d) \int \frac{dx}{(x+4)^2} = -\frac{1}{x+4} + k$$

$$e) \int \frac{x^2 + 2}{x^2 + 1} dx = \int \frac{x^2 + 1 + 1}{x^2 + 1} dx = \int \left(1 + \frac{1}{x^2 + 1}\right) dx = x + \arctan x + k$$

$$f) \int \frac{8x}{\sqrt{1 + 4x^2}} dx = 2\sqrt{1 + 4x^2} + k$$

$$g) \int \frac{\sin(x)}{\cos^2(x)} dx = \frac{1}{\cos x} + k$$

$$h) \int \frac{e^{\sqrt{x}}}{\sqrt{x}} dx = 2e^{\sqrt{x}} + k$$

KALKULUA – MINTEGIETAKO 3. KONTROLA (B eredua)

IZEN-ABIZENAK:

TALDEA:

1.- Kalkulatu hurrengo funtzioen deribatuak:

(2 puntu)

$$a) f(x) = \sqrt{x^3 - 3x} \Rightarrow f'(x) = \frac{3x^2 - 3}{2\sqrt{x^3 - 3x}}$$

$$b) f(x) = \frac{1}{\sqrt{\sin x}} \Rightarrow f'(x) = -\frac{\cos x}{2 \sin x \cdot \sqrt{\sin x}}$$

$$c) f(x) = \cos^2(e^{4x+x^2}) \Rightarrow f'(x) = -2(4+2x)e^{4x+x^2} \cdot \cos(e^{4x+x^2}) \cdot \sin(e^{4x+x^2})$$

$$d) f(x) = \tan^2(x^4 + 3x^3) \Rightarrow f'(x) = \frac{2(4x^3 + 9x^2) \tan(x^4 + 3x^3)}{\cos^2(x^4 + 3x^3)}$$

2.- Kalkulatu hurrengo funtzioen integralak:

(2 puntu)

$$a) \int 4x^3 \cdot \sqrt{4+x^4} dx = \frac{2}{3}(4+x^4)^{3/2} + k$$

$$b) \int \frac{dx}{\sqrt{1-9x^2}} = \frac{1}{3} \arcsin(3x) + k$$

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

$$d) \int \frac{10x}{\sqrt{1+5x^2}} dx = 2\sqrt{1+5x^2} + k$$

$$e) \int \frac{x^2-1}{x^2+1} dx = \int \frac{x^2+1-2}{x^2+1} dx = \int \left(1 - \frac{2}{x^2+1}\right) dx = x - 2 \arctan x + k$$

$$f) \int \cos^2 x \cdot \sin x dx = -\frac{\cos^3 x}{3} + k$$

$$g) \int \frac{Lx}{x} dx = \frac{(Lx)^2}{2} + k$$

$$h) \int \frac{\cos(x)}{\sin^2(x)} dx = -\frac{1}{\sin x} + k$$

KALKULUA – MINTEGIETAKO 3. KONTROLA (D eredua)

IZEN-ABIZENAK:

TALDEA:

1.- Kalkulatu hurrengo funtzioen deribatuak:

(2 puntu)

$$a) f(x) = \frac{1}{\sqrt{x^7 + 3x}} \Rightarrow f'(x) = -\frac{7x^6 + 3}{2(x^7 + 3x)\sqrt{x^7 + 3x}}$$

$$b) f(x) = \sqrt{\cos(e^{x^2+3x})} \Rightarrow f'(x) = -\frac{(2x+3) \cdot e^{x^2+3x} \cdot \sin(e^{x^2+3x})}{2\sqrt{\cos(e^{x^2+3x})}}$$

$$c) f(x) = \sin^3(e^{-x}) \Rightarrow f'(x) = -3e^{-x} \cdot \sin^2(e^{-x}) \cdot \cos(e^{-x})$$

$$d) f(x) = \tan^3(x^2 - x^5) \Rightarrow f'(x) = \frac{3(2x - 5x^4) \cdot \tan^2(x^2 - x^5)}{\cos^2(x^2 - x^5)}$$

2.- Kalkulatu hurrengo funtzioen integralak:

(2 puntu)

$$a) \int \frac{6x}{\sqrt{1+3x^2}} dx = 2\sqrt{1+3x^2} + k$$

$$b) \int \frac{dx}{(x+3)^4} = -\frac{1}{3(x+3)^3} + k$$

$$c) \int \frac{dx}{\sqrt{1-36x^2}} = \frac{1}{6} \arcsin(6x) + k$$

$$d) \int 3x^2 \cdot \sqrt{5+x^3} dx = \frac{2}{3}(5+x^3)^{3/2} + k$$

$$e) \int \frac{2x-2}{x^2+1} dx = \int \left(\frac{2x}{x^2+1} - \frac{2}{x^2+1} \right) dx = L(x^2+1) - 2 \arctan x + k$$

$$f) \int \tan^2 x dx = \int \left(\frac{1}{\cos^2 x} - 1 \right) dx = \tan x - x + k$$

$$g) \int \frac{e^x}{1+e^{2x}} dx = \arctan(e^x) + k$$

$$h) \int \cos^3 x \cdot \sin x dx = -\frac{\cos^4 x}{4} + k$$