



UNIVERSIDAD AUTONOMA DEL ESTADO DE MEXICO



PREPARATORIA REGIONAL DE TEJUPILCO

MATERIA: CALCULO DIFERENCIAL

NOMBRE DEL CATEDRATICO: Lic. ALFONSO JARAMILLO AVILES

PROYECTO COLABORATIVO

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QUINTO SEMESTRE

GRUPO 1

Derivadas máximos y mínimos

Derivada 2

$$1 = f(x) = \text{arc sen}(2x + 1)$$

$$f(x) = \frac{2}{\sqrt{2} - u^2} \frac{dv}{dx} = f(x) = \frac{2}{\sqrt{2} - (2x + 1)}$$

$$2 = f(x) = \text{arc cos}(2x^2 - 3)$$

$$f(x) = -\frac{1}{\sqrt{2} - u^2} \frac{du}{dx}$$

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

Derivada 4x

$$3 = f(x) = \text{arc tan}(x + 3x^2)$$

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

$$f(x) = \frac{1 + 6x}{2 + (x + 3x^2)^2}$$

Derivada 1+6x

$$4 = f(x) = \text{arc sec}(3 - x)$$

$$f(x) = \frac{2}{u\sqrt{u^2 - 2}}$$

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

Derivada 2

$$5 = y = \frac{\text{sen } x u}{\text{arc cos } x^3 v}$$

$$y^1 = \frac{(\text{are } \cos x^3) (\cos x) - (\text{sen } x) - \frac{-3\text{sen } x (\cos x^2)}{\sqrt{1 - (\cos x^3)^2}}}{(\text{are } \cos x^3)^2}$$

$$y = \frac{1 \frac{\cos x \text{ are } \cos x^3 + 3 \text{ sen } 2 x (\cos x)^2}{3^2}}{(\text{are } \cos x^3)^2 \sqrt{1 - (\cos x^3)^2}}$$

$$\text{are } \cos x^3 = \text{are}(\cos x)^3 = 3(\cos x)(-\text{sen } x) = -3\text{sen } x (\cos x)^2$$

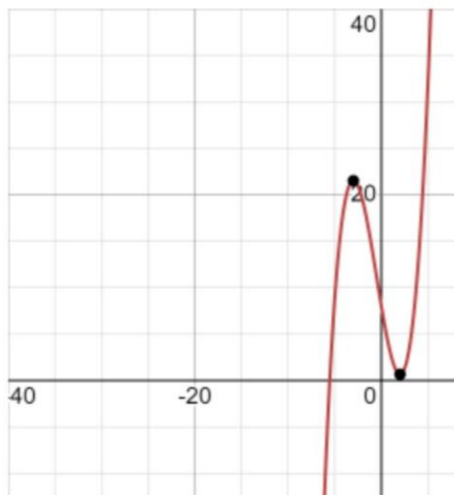
$$\frac{-3\text{sen } x (\cos x)^2}{\sqrt{1 - (\cos x^3)^2}}$$

1. $f(x) = \frac{1}{3}x^3 + \frac{1}{2}x^2 - 6x + 8$

$$\frac{d}{dx} \left[\frac{1}{3}x^3 \right] + \frac{d}{dx} \left[\frac{1}{2}x^2 \right] + \frac{d}{dx} [-6x] + \frac{d}{dx} [8]$$

$$x^2 + x - 6 = 0$$

$$x^2 + x - 6 = 0$$



Crece $(-\infty, -3)$ u $(2, \infty)$

Decrece $(-3, 2)$ $(2, \infty)$

X= $(2, 0.5)$ Punto mínimo

X= $(-3, 21.5)$ Punto máximo

$$2. f(x) = x^3 - 6x^2 + 9x - 8$$

$$x = \frac{b \pm \sqrt{b^2 - 4ac}}{2a} = x = \frac{12 \pm \sqrt{(-12)^2 - 4(3)(9)}}{2(3)} = x = \frac{12 - 6}{6} = 1$$

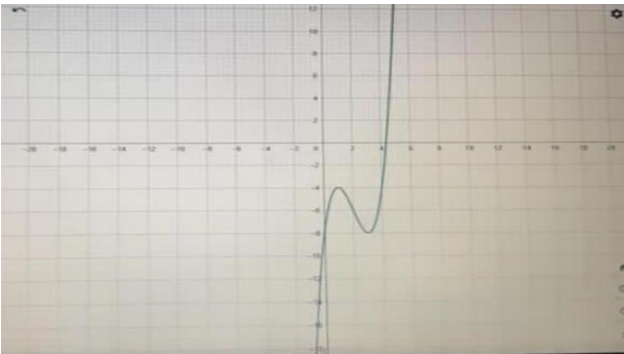
$$6x - 12$$

X= $(3, -8)$ Punto mínimo

X= $(1, -4)$ Punto máximo

Crece $(-\infty, 1)$ u $(3, \infty)$

Decrece $(1, 3)$



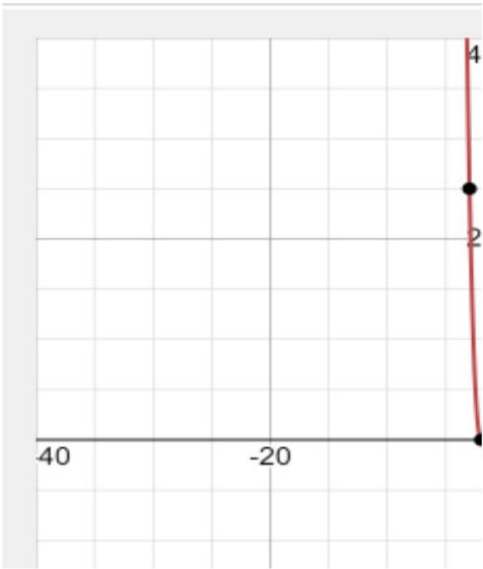
$$3. f(x) = x^4 - 8x^2 + 16$$

$$(x^2)^2 - 8x^2 + 16$$

$$u^2 - 8u + 16 = u^2 - 8u + 4^2 = 2ab = 2 * u * -4$$

$$2ab = -8u = (u - 4)^2$$

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



Decrece $(-\infty, -a)$ u $(0, 2]$

Crece $(-2, 0)$ $(2, \infty)$

Punto máximo $(0, 16)$

Punto mínimo $(-2, 0)$ $(2, 0)$