GUIA PARA EXTRAORDIANRIO DE CALCULO DIFERENCIAL

DEPARTAMENTO DE SERVICIOS DOCENTES

UNIDAD DE EDUCACIÓN MEDIA SUPERIOR TECNOLÓGICA INDUSTRIAL Y DE SERVICIOS C.E.T.I.S. No. 33

Centro de Estudios Tecnológicos Industrial y de Servicios No. 33 "Carlos María de Bustamante" **"CARLOS MARÍA DE BUSTAMANTE"** Centro de Estudios Tecnológicos Industrial y de Servicios No. 33 "Carlos María de Bustamante"

FECHA DE ENTREGA: 1 DE FEBRERO DE 2024

COORDINACIÓN DEL COMPONENTE DE FORMACIÓN BÁSICA

Derivadas por formula.

$$d\left(\frac{cx}{dx}\right) = c$$

Ejemplo:

$f(x) = 2x$ Derivada $f(x) = 2$

$f(x) = 5x$ Derivada $f(x) = 5$

$f(x) = x$ Derivada $f(x) = 1$

Ejercicios:

$f(x) = 7x$ Derivada $f(x) =$

$f(x) = -9x$ Derivada $f(x) =$

$f(x) = 6x$ Derivada $f(x) =$

$f(x) = ax$ Derivada $f(x) =$

$f(x) = bx$ Derivada $f(x) =$

$f(x) = zx$ Derivada $f(x) =$

$f(x) = \frac{7}{3}x$ Derivada $f(x) =$

$f(x) = -\frac{9}{a}x$ Derivada $f(x) =$

$f(x) = -5.6x$ Derivada $f(x) =$

$f(x) = b^2x$ Derivada $f(x) =$

$f(x) = azx$ Derivada $f(x) =$

$f(x) = \frac{11}{3}x$ Derivada $f(x) =$

$f(x) = -\frac{n}{a}x$ Derivada $f(x) =$

$f(x) = -2.4x$ Derivada $f(x) =$

$$d\left(\frac{x^n}{dx}\right) = nx^{n-1}$$

Ejemplos

$f(x) = x^6$ $f'(x) = 6x^{6-1}$ $f'(x) = 6x^5$

$f(x) = x^{\frac{3}{5}}$ $f'(x) = \frac{3}{5}x^{\frac{3}{5}-1}$ $f'(x) = \frac{3}{5}x^{\frac{2}{5}}$

Ejercicios:

$f(x) = x^4$ $f'(x) =$ $f'(x) =$

$f(x) = x^{10}$ $f'(x) =$ $f'(x) =$

$f(x) = x^6$ $f'(x) =$ $f'(x) =$

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

$f(x) = x^{-4}$ $f'(x) =$ $f'(x) =$

$f(x) = x^{14}$ $f'(x) =$ $f'(x) =$

$f(x) = x^9$ $f'(x) =$ $f'(x) =$

$f(x) = x^{\frac{4}{3}}$ $f'(x) =$ $f'(x) =$

$f(x) = x^{\frac{9}{7}}$ $f'(x) =$ $f'(x) =$

$f(x) = x^{\frac{11}{4}}$ $f'(x) =$ $f'(x) =$

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FECHA DE ENTREGA: 1 DE FEBRERO DE 2024

COORDINACIÓN DEL COMPONENTE DE FORMACIÓN BÁSICA

$$d\left(\frac{C}{dx}\right) = 0$$

$f(t) = x^6$ $\quad f'(t) = 0$

$f(z) = x^{\frac{3}{5}}$ $\quad f'(z) = 0$

Ejercicios:

$f(a) = x^6$ $\quad f'(a) =$

$f(t) = a^6$ $\quad f'(t) =$

$f(m) = z^6$ $\quad f'(m) =$

$f(n) = m^6$ $\quad f'(\quad) =$

$f(t) = u^6$ $\quad f'(\quad) =$

$f(t) = z^6$ $\quad f'(\quad) =$

$$d\left(\frac{cv}{dx}\right) = cd\left(\frac{v}{dx}\right)$$

Ejemplo:

$f(x) = 5x^6$ $\quad \frac{d}{dx}(5x^6) = 5d\left(\frac{x^6}{dx}\right)$ $\quad f'(x) = 5(6x^5) = 30x^5$

$f(x) = 3x^{10}$ $\quad d(3x^{10}) = 3d\left(\frac{x^{10}}{dx}\right)$ $\quad f'(x) = 3(10x^9) = 30x^9$

$f(z) = 7z^6$ $\quad d(7z^6) = 7d\left(\frac{z^6}{dz}\right)$ $\quad f'(z) = 7(6z^9) = 42z^9$

Ejercicios:

$f(t) = -12t^2$ $\quad d(-12t^2) = \quad d\left(\frac{}{dt}\right) \quad f'(t) = (\quad) =$

$f(x) = 2x^2$ $\quad d(2x^2) = \quad d\left(\frac{}{dt}\right) \quad f'(t) = (\quad) =$

$f(x) = 3x^5$ $\quad d(3x^5) = \quad d\left(\frac{}{dt}\right) \quad f'(t) = (\quad) =$

$f(x) = 7x^6$ $\quad d(7x^6) = \quad d\left(\frac{}{dt}\right) \quad f'(t) = (\quad) =$

$f(x) = 8x^6$ $\quad d(8x^6) = \quad d\left(\frac{}{dt}\right) \quad f'(t) = (\quad) =$

$f(x) = 9x^7$ $\quad d(9x^7) = \quad d\left(\frac{}{dt}\right) \quad f'(t) = (\quad) =$

$f(x) = 3x^{11}$ $\quad d(3x^{11}) = \quad d\left(\frac{}{dt}\right) \quad f'(t) = (\quad) =$

$f(x) = -6x^6$ $\quad d(-6x^6) = \quad d\left(\frac{}{dt}\right) \quad f'(t) = (\quad) =$

$f(x) = \frac{7}{4}x^6$ $\quad d\left(\frac{7}{4}x^6\right) = \frac{7}{4} \quad d\left(\frac{x^6}{dt}\right) \quad f'(t) = \frac{7}{4}(6x^5) = \frac{42}{4}x^5 = \frac{21}{2}x^5$

$f(x) = \frac{3}{8}x^3$ $\quad d(\quad) = \quad d\left(\frac{}{dt}\right) \quad f'(t) = (\quad) =$

$f(x) = \frac{5}{7}x^8$ $\quad d(\quad) = \quad d\left(\frac{}{dt}\right) \quad f'(t) = (\quad) =$

$f(x) = 5x^{10}$ $\quad d(\quad) = \quad d\left(\frac{}{dt}\right) \quad f'(t) = (\quad) =$

$f(x) = 2x^{10}$ $\quad d(\quad) = \quad d\left(\frac{}{dt}\right) \quad f'(t) = (\quad) =$

$f(x) = 5x^{12}$ $\quad d(\quad) = \quad d\left(\frac{}{dt}\right) \quad f'(t) = (\quad) =$

$f(x) = 9x^7$ $\quad d(\quad) = \quad d\left(\frac{}{dt}\right) \quad f'(t) = (\quad) =$

$f(x) = 21x^4$ $\quad d(\quad) = \quad d\left(\frac{}{dt}\right) \quad f'(t) = (\quad) =$

$f(x) = 11x^3$ $\quad d(\quad) = \quad d\left(\frac{}{dt}\right) \quad f'(t) = (\quad) =$

$f(x) = 8x^7$ $\quad d(\quad) = \quad d\left(\frac{}{dt}\right) \quad f'(t) = (\quad) =$

$$d\left(\frac{v+u-w}{dx}\right)=\left(\frac{v}{dx}\right)+\left(\frac{u}{dx}\right)-\left(\frac{w}{dx}\right)$$

Ejemplos:

$f(x)=2x+x^6-x^{\frac{3}{5}}$ + m

$f'(x)=x+6x^5-\frac{3}{5}x^{-\frac{2}{5}}$

$f(x)=7x+x^{-12}-x^{\frac{4}{5}}$ +a+b

$f(x)=7-12x^{-13}-\frac{4}{5}x^{-\frac{1}{5}}$

Ejercicios:

$f(x)=4x+x^7-x^{\frac{3}{5}}$ + m

$f'(x)=$

$f(x)=6x+x^9-x^{\frac{1}{5}}$ + a

$f'(x)=$

$f(x)=-6x+x^{10}-x^{\frac{1}{3}}$ + t

$f'(x)=$

$f(x)=ax+x^7-x^{\frac{1}{8}}$ + 3t

$f'(x)=$

$f(t)=bt+t^5-t^{\frac{1}{8}}$ + 3t

$f'(t)=$

$$d\left(\frac{\sqrt{v}}{dx}\right)=\frac{\frac{d(v)}{dx}}{2\sqrt{v}}$$

Ejemplos:

$f(x)=\sqrt{5x^3+6x+5}$ $\quad f'(x)=\frac{15x^2+6}{2\sqrt{5x^3+6x+5}}$

$f(x)=\sqrt{7x^5+ax+m}$ $\quad f'(x)=\frac{35x^4+a}{2\sqrt{7x^5+ax+m}}$

$f(x)=\sqrt{3x^3+2x+3}$ $\quad f'(x)=\frac{9x^2+2}{2\sqrt{3x^3+2x+3}}$

Ejercicios:

$f(x)=\sqrt{6x^4+5x+3}$ $\quad f'(x)=$

$f(x)=\sqrt{8x^6+6x+3}$ $\quad f'(x)=$

$f(x)=\sqrt{10x^{10}+10x+3}$ $\quad f'(x)=$

$f(x)=\sqrt{8x^{11}+8x+3}$ $\quad f'(x)=$

$f(x)=\sqrt{10x^3+2x+3}$ $\quad f'(x)=$

$f(x)=\sqrt{15x^3+2x+3}$ $\quad f'(x)=$

$$d\left(\frac{v^n}{dx}\right)=nv^{n-1}d\left(\frac{v}{dx}\right)$$

Ejemplo:

$f(x)=(3x^3+2x+3)^4$

$\frac{d}{dx}((3x^3+2x+3)^4)=4(3x^3+2x+3)^3\frac{d}{dx}(3x^3+2x+3)$

$f'(x)=4(3x^3+2x+3)^3(9x^2+2)=4(9x^2+2)(3x^3+2x+3)^3$

$f'(x)=36x^2+8(3x^3+2x+3)^3$

$f(t)=(6t^3+5t+a)^3$

$\frac{d}{dt}((6t^3+5t+a)^3)=3d(6t^3+5t+a)^2\frac{d}{dt}(6t^3+5t+a)$

$=3(6t^3+5t+a)^2(12t^2+5)=3(12t^2+5)(6t^3+5t+a)^2$

$=36t^2+15(6t^3+5t+a)^2$

$f(t)=(3t^3+10t+a)^3$

$\frac{d}{dt}(($ $)^{\quad})=d($ $)^{\quad}\frac{d}{dt}($ $)$

$=($ $)^{\quad}($ $)=($ $)($ $)$

$=$ $($ $)$

Derivadas trigonométricas.

$$\frac{d(\boldsymbol{Sen}\ U)}{dx} = \frac{dU}{dx}\boldsymbol{Cos}U$$

Ejemplo:

$$\frac{d(\mathbf{Sen}2x^5)}{dx} = \frac{d(2x^5)}{dx}\mathbf{Cos}2x^5$$

$f(x) = \mathbf{Sen}2x^5 \qquad f'(x) = 10x^4\mathbf{Cos}2x^5$

Ejercicios:

$f(x) = \mathbf{Sen}7x^5 \qquad f'(x) = \mathbf{Cos}$

$f(x) = \mathbf{Sen}3x^8 \qquad f'(x) = \mathbf{Cos}$

$f(x) = \mathbf{Sen}6x^4 \qquad f'(x) = \mathbf{Cos}$

$f(x) = \mathbf{Sen}7x^5 \qquad f'(x) = \mathbf{Cos}$

$$\frac{d(\boldsymbol{Cos}\ U)}{dx} = -\frac{dU}{dx}\boldsymbol{Sen}U$$

Ejemplo:

$$\frac{d(\mathbf{Cos}2x^5)}{dx} = -\frac{d(2x^5)}{dx}\mathbf{Sen}2x^5$$

$f(x) = \mathbf{Cos}7x^5 \qquad f'(x) = -35x^4\ \mathbf{Sen}7x^5$

Ejercicios:

$f(x) = \mathbf{Cos}3x^8 \qquad f'(x) = \mathbf{Sen}$

$f(x) = \mathbf{Cos}6x^4 \qquad f'(x) = \mathbf{Sen}$

$f(x) = \mathbf{Cos}7x^5 \qquad f'(x) = \mathbf{Sen}$

$$\frac{d(\boldsymbol{tg}\ U)}{dx} = \frac{dU}{dx}\boldsymbol{Sec^2}U$$

Ejemplo:

$$\frac{d(\mathbf{tg}2x^5)}{dx} = \frac{d(2x^5)}{dx}\boldsymbol{Sec^2}2x^5$$

$f(x) = \mathbf{tg}2x^5 \qquad f'(x) = 10x^4\boldsymbol{Sec^2}2x^5$

Ejercicios:

$f(x) = \mathbf{tg}7x^5 \qquad f'(x) = \boldsymbol{Sec^2}$

$f(x) = \mathbf{tg}3x^8 \qquad f'(x) = \boldsymbol{Sec^2}$

$f(x) = \mathbf{tg}6x^4 \qquad f'(x) = \boldsymbol{Sec^2}$

$f(x) = \mathbf{tg}7x^5 \qquad f'(x) = \boldsymbol{Sec^2}$