Unidad Cuatro. Derivadas con fórmula

Tarea derivada con fórmulas. Funciones de potencia $d(x^n) = nx^{n-1}$

Derivar las funciones de potencia utilizando fórmula. Escribe el resultado sin dejar exponentes negativos, ni potencias fracción.

$y = x^{10}$ $\quad$ $y = x^{-12}$ $\quad$ $y = \frac{1}{x^{90}}$ $\quad$ $y = \frac{1}{x^{3/4}}$

$y = x^{8}$ $\quad$ $y = x^{-57}$ $\quad$ $y = x^{9/5}$ $\quad$ $y = \frac{1}{\sqrt[7]{x^8}}$

$y = x^{25}$ $\quad$ $y = \frac{1}{x^9}$ $\quad$ $y = x^{8/27}$ $\quad$ $y = \frac{1}{x^{13/11}}$

$y = x^{-5}$ $\quad$ $y = \frac{1}{x^{24}}$ $\quad$ $y = \sqrt[22]{x^9}$

Resultados

$y' = -\frac{90}{x^{91}}$ $\quad$ $y' = -\frac{9}{x^{10}}$ $\quad$ $y' = -\frac{15}{44\sqrt[44]{x^{59}}}$ $\quad$ $y' = 25x^{24}$

$y' = -\frac{57}{x^{58}}$ $\quad$ $y' = -\frac{5}{x^6}$ $\quad$ $y' = \frac{8}{27\sqrt[27]{x^{19}}}$

$y' = -\frac{24}{x^{25}}$ $\quad$ $y' = -\frac{13}{11\sqrt[11]{x^{24}}}$ $\quad$ $y' = \frac{9\sqrt[5]{x^4}}{5}$

$y' = -\frac{12}{x^{13}}$ $\quad$ $y' = -\frac{8}{7\sqrt[7]{x^{15}}}$ $\quad$ $y' = 8x^7$

$y' = 10x^9$

Tarea derivadas con fórmula. Sumas, restas y constantes por función

$$d\big(f(x) \pm g(x)\big) = f'(x) \pm g'(x) \qquad d\big(k\, f(x)\big) = k\, f'(x)$$

Derivar las siguientes funciones

$\frac{d}{dx}(\sin(x) + 3\cos(x))$

$\frac{d}{dx}\left(-10\,x^6 + 5\,x^3 + x^2\right)$

$\frac{d}{dx}\left(x^8 + 8\csc(x)\right)$

$\frac{d}{dx}\left(5\,x^{4/5} - 2\sqrt[3]{x}\right)$

$\frac{d}{dx}\left(x^5 + 5^x\right)$

$\frac{d}{dx}(7\,\mathrm{Invsen}(x) - 8\,\mathrm{Invcos}(x))$

$\frac{d}{dx}(x + 4\ln(x))$

$\frac{d}{dx}\left(\sqrt{x} - \frac{1}{\sqrt{x}}\right)$

$\frac{d}{dx}(9\tan(x) + 7\sec(x))$

$\frac{d}{dx}\left(\frac{1}{2\,x^{3/4}} - \frac{4}{5\,x^{5/3}}\right)$

Resultados

$-60\,x^5 + 15\,x^2 + 2\,x$

$9\sec^2(x) + 7\tan(x)\sec(x)$

$5\,x^4 + 5^x \ln 5$

$8\,x^7 - 8\cot(x)\csc(x)$

$\cos(x) - 3\sin(x)$

$\frac{4}{\sqrt[5]{x}} - \frac{2}{3\,x^{2/3}}$

$\frac{1}{2\,x^{3/2}} + \frac{1}{2\sqrt{x}}$

$\frac{4}{3\,x^{8/3}} - \frac{3}{8\,x^{7/4}}$

$\frac{15}{\sqrt{1-x^2}}$

$\frac{4}{x} + 1$

Tarea derivadas con fórmula. Productos y cocientes

$$d\big(f(x)+g(x)\big)=f(x)g'(x)+g(x)f'(x)$$

$$d\left(\frac{f(x)}{g(x)}\right)=\frac{g(x)f'(x)-f(x)g'(x)}{(g(x))^2}$$

$\frac{d}{dx}(\ln(x)\ \arccos(x))$

$\frac{d}{dx}\left(3^x \csc(x)\right)$

$\frac{d}{dx}\left(2\sqrt{x}\ \arcsin(x)\right)$

$\frac{d}{dx}\left(x\ \ (\sin(x)+3\cos(x))\right)$

$\frac{d}{dx}\left(\left(\sec(x)-5x^7\right)\ \ (5+4x)\right)$

$\frac{d}{dx}\left(\frac{\sin(x)}{5x+2}\right)$

$\frac{d}{dx}\left(\frac{x^2+8}{4x^3-2}\right)$

$\frac{d}{dx}\left(\frac{\sin(x)+2\cos(x)}{2\cos(x)-\sin(x)}\right)$

$\frac{d}{dx}\left(\frac{6}{2\arctan(x)}\right)$

$\frac{d}{dx}\left(\frac{x}{x+1}\right)$

Resultados

$\frac{\arccos(x)}{x}-\frac{\ln(x)}{\sqrt{1-x^2}}$

$\frac{\arcsin(x)}{\sqrt{x}}+\frac{2\sqrt{x}}{\sqrt{1-x^2}}$

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

$\frac{4\left(\cos(x)^2+\sin(x)^2\right)}{(2\cos(x)-\sin(x))^2}$

$-\frac{3}{\arctan(x)^2\left(x^2+1\right)}$

$-\frac{x\left(x^3+1+24x\right)}{\left(2x^3-1\right)^2}$

$3^x\ln(3)\csc(x)-3^x\csc(x)\cot(x)$

$\left(\sec(x)\tan(x)-35x^6\right)(5+4x)+4\sec(x)-20x^7$

$\sin(x)+3\cos(x)+x\left(\cos(x)-3\sin(x)\right)$

$\frac{5\cos(x)\,x+2\cos(x)-5\sin(x)}{(5x+2)^2}$

Tarea derivadas con fórmula. Regla de la Cadena

$$d\left(f\left(g(x)\right)\right) = f'\left(g(x)\right)\cdot g'(x)$$

$\frac{d}{dx}\left(\sin\left(3^x\right)\right)$

$\frac{d}{dx}\left(3^{\cos(x)}\right)$

$\frac{d}{dx}\left(\arcsin(\sec(x))\right)$

$\frac{d}{dx}\left(\arctan\left(\sqrt{x}\right)\right)$

$\frac{d}{dx}\left(\ln(\arccos(x))\right)$

$\frac{d}{dx}\left(\sin(\ln(x))\right)$

$\frac{d}{dx}\left((\arctan(x))^{10}\right)$

$\frac{d}{dx}\left(3^{\sin(\ln(x))}\right)$

$\frac{d}{dx}\left(e^{5\cos(4x^2+1)^2}\right)$

$\frac{d}{dx}\left(2^{\sec(x+x^2)}\right)$

Resultados

$\frac{\cos(\ln(x))}{x}$ $\quad -\frac{1}{\sqrt{1-x^2}\,\arccos(x)}$ $\quad \cos\left(3^x\right)\,3^x\,\ln(3)$ $\quad -3^{\cos(x)}\,\sin(x)\,\ln(3)$

$\frac{1}{2\sqrt{x}\,(1+x)}$ $\quad \frac{3^{\sin(\ln(x))}\,\cos(\ln(x))\,\ln(3)}{x}$ $\quad \frac{10\arctan(x)^9}{1+x^2}$ $\quad \frac{\sec(x)\tan(x)}{\sqrt{1-\sec(x)^2}}$

$-80\cos\left(4x^2+1\right)\sin\left(4x^2+1\right)x\,e^{5\cos(4x^2+1)^2}$ $\quad 2^{\sec(x+x^2)}\sec\left(x+x^2\right)\tan\left(x+x^2\right)(1+2x)\ln(2)$