# C12 - 2.5/6/9/10/11/12/13 - Derivatives Hmk

Find the derivative using the definition of the derivative.

$y = 1 - x^2$

$y = x^3 + x$

$y = \frac{2x}{x-1}$

$y = \frac{1}{2-x^2}$

$y = \sqrt{x+1}$

$y = \frac{1}{\sqrt{x-1}}$

Find the derivative.

$y = x^2 + 2x$

$y = 5^2$

$y = x^3 - 2\sqrt{x}$

$y = \sqrt[3]{x}$

$y = \frac{1}{2x}$

$y = \frac{-3}{\sqrt{x}}$

$y = \frac{2x^4 - 3x^2 + 2}{x^3}$

$y = 2\sqrt{x}(3x^2 + x)$

$y = (3x+1)(x^3 - 4x)$

$y = (3x^5 - 4)(x^2 - 6)$

$y = \frac{4x}{2x-1}$

$y = \frac{2x^3}{x^2 - x}$

$y = (5x+1)^7$

$y = (4x^3 - x)^3$

$y = \left(3x - \frac{1}{x}\right)^2$

$y = (2x^2 + x)^3(x-1)$

$y = (5x + (x^2+1)^2)^3$

$y = \frac{(3x-1)^2}{x+1}$

$y = \frac{(2x^2+1)^3}{(2x+2)^5}$

Find the derivative

$y = 5^{3x}$

$y = e^{x^2}$

$y = x^2 e^{2x}$

$y = ln2x$

$y = x^2 ln2x$

$y = x^2 lnx$

$y = e^{xlnx}$

$y = \ln(\ln(2x^2))$

$y = (lnx)^2$

$y = \ln\left(x^2\sqrt{x+1}\right)$

$y = \ln(\frac{x+1}{x-1})$

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

$y = x^{e^x}$

$y = x^x$

$y = lnx^x$

$y = \ln(\ln(\sin(e^x)))$

$y = \log_7 x^2$

$x^2 + y^2 = 9$

$x^3 - y^3 - 2 = 0$

$x^2 + xy = 2$

$x^2y^2 - 2x = 5$

$(xy + x)^2 = 5$

$y = \sin(xy)$

$\ln(xy) = x - y$

Find the derivative and value at x=1.

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

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

$\frac{d}{dx} f(f(sinx))$

$\frac{d}{dx} \frac{f(x)}{g^2(x)} =$

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

$\frac{d}{dx} f(g\left(h(x)\right) =$

$\frac{d}{dx} \frac{\sqrt{x}}{f(x)} =$

$\frac{d}{dx} [f(x^3) + 3x]^3$

$\frac{d}{dx} \sqrt{f(x)g(x^2)}$

$y = sin2x$

$y = \sin^2 2x$

$y = tan2x$

$y = xsin\sqrt{x}$

$y = sinx^2$

$y = \cos(sinx)$

$y = \frac{cosx}{1 - sinx}$

`$y = \sec^2 2x$

$y = \cot(\sqrt{x})$

$y = \sin(\cos(\tan(x^2))$

Find the derivative

$y = \sin^{-1}(x^2)$

$y = \tan^{-1}(2x)$