The Derivative of $\ln(x)$ and More Chain Rule

The Derivative of $\ln(x)$

$$\frac{d}{dx}\left[\ln(x)\right] = \frac{1}{x}$$

Example 1: Find the derivative of $h(x) = 2\ln(x)$.

Example 2: Find the derivative of $y = \ln\left(x^2 + 5\right)$.

Example 3: The position, in meters, of a particle moving on a straight line is given by $s(t) = (5t - 2)^2\sqrt{3t}$, where t is measured in seconds. What is the velocity of the particle when $t = 3$?

Example 4: Find the derivative of $y = 3\cot^2(4x)$.

Example 5: Find the derivative of $y = e^{2x}\sin(7x)$.

DIY

1. Find the derivative of the following function.

$$y = \ln\left[\sqrt{(x^2+3)\,(x^4+3x^2+1)}\right]$$