

1.
 - (a) Write a single equation that expresses 16 as a power of 2.
 - (b) Write a single equation that expresses s as a power of t .
 - (c) Write a single equation that expresses 2 as a power of e .

2. Demonstrate how to use the previous question and the chain rule to find $\frac{dy}{dx}$ when $y = 2^x$.

3. Demonstrate how to find an equation for the derivative of each of the following functions.
 - (a) $f(x) = 3^x$
 - (b) $g(t) = b^t$
 - (c) $y = b^{\sin(x)}$Be sure your notation is consistent with each amount function.

4. Let $y = \ln(x)$. Our goal is to find the derivative, $\frac{dy}{dx}$.
 - (a) Express x as a function of y . Why is your equation correct?
 - (b) Write an equation for $\frac{dx}{dy}$
 - (c) Write an equation for $\frac{dy}{dx}$ in terms of x .

5. Without looking at a calculator, consider $f(x) = \sin((x - 1)^2)$ for $x \in [0, 3]$
 - (a) Find the x value for each of the stationary points.
 - (b) Which value (if any) of x is a local maximum? Use calculus to explain why your answer is correct.