

DoNow

1. $y = e^{\sin(x^2)}$. Demonstrate how to find $\frac{dy}{dx}$ using Leibnitz notation.

Start with a function machine diagram showing how y is a composition of functions.

2. Without using your calculator, find the x -values of the stationary points $f(x) = x^3 - 4x^2 + 1$. Briefly explain your reasoning.
3. (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 .

Chain Rule Practice – From Yesterday

4. Assume that $f(x)$ and $g(x)$ are differentiable functions about which we know very little. In fact, assume that all we know about these functions is the following table of data:

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
-2	3	1	-5	8
-1	-9	7	4	1
0	5	9	9	-3
1	3	-3	2	6
2	-5	3	8	?

- Let $m(x) = \frac{1}{(f(x))^3}$. What is $m'(1)$?

5. Demonstrate how to find $\frac{dy}{dx}$ when:

(Note: Be sure to use equations. Expressions need not be “simplified.”)

- (a) $y = (3x^5 - 4)^{10}$
 (b) $y = e^{-x^2}$
 (c) $y = \cos\left(\frac{1}{x}\right)$
 (d) $y = x \cdot \sin(x^6)$