

Calculus I-01  
Chain Rule Workshop

Determine the derivative, with respect to  $x$ , of each of the following:

1.  $\sin(e^{-x}x^2)$

2.  $e^{-x^2}(\sin(2x) + x)$

3.  $\frac{e^{-2x}}{(x^2 + 3x + 1)^3}$

Assuming that the equation defines  $y$  as a function of  $x$ , determine  $dy/dx$  for each of the following:

4.  $y\sin(x^2) = x\sin(y^2)$

5.  $\sqrt{x+y} = 1 + x^2y^2$

6.  $x^2 + 2xy - y^2 + x = 2$