

## The Chain Rule- HW Problems

Find the derivatives.

1.  $y = (x^2 + 1)^{30}$

2.  $f(t) = (t^3 - 2t)^5$

3.  $g(x) = \left(\frac{x^2}{1+x^3}\right)^5$

4.  $y = (3x + 2)^4(x^2 - x)^3$

5.  $f(x) = \cos(x^2 + 2x - 4)$

6.  $g(\theta) = \sin^4(3\theta)$

7.  $y = (\csc(t) + t^2)^8$

8.  $f(x) = x^2 \tan(x^2)$

9.  $g(x) = \left(\frac{\sec(x)}{1+\sec(x)}\right)^3$

10.  $y = \sin[\cos(x^4)]$

11.  $f(x) = \cos^3(x^8)$

12.  $y = \tan\left(\frac{1+\theta}{1-\theta}\right)$

13. Find the second derivative of  $y = \sin(x^2)$ .