Name: _____ Period: _____ Date: _____

AP CALCULUS BC
Worksheet 4.2
Chain Rule

Differentiate the following. Do not simplify.

1. $f(x) = \sin x \cot x$

2. $f(x) = \dfrac{\tan x}{1 + x^2}$

3. $g(w) = \dfrac{1 + \sec w}{1 - \sec w}$

4. $k(x) = \sin\left(x^2 + 2\right)$

5. $H(x) = \cos^5 3x$

6. $t(z) = \sec(2z + 1)^2$

7. $r(a) = \csc\left(a^2 + 4\right)$

8. $f(x) = \cos\left(3x^2\right) + \cos^2(3x)$

9. $K(z) = z^2 \cot(5z)$

10. $F(x) = \dfrac{\cos 4x}{1 - \sin 4x}$

11. $f(x) = (\tan 2x - \sec 2x)^3$

12. $s(\theta) = \tan \sqrt[3]{5 - 6\theta}$

Find the equation of the line tangent to the curve at the point defined by the given value of t.

13. $x = \cos t$, $y = 1 + \sin t$, $t = \dfrac{\pi}{2}$

14. $x = \sec t$, $y = \tan t$, $t = \dfrac{\pi}{6}$

15. $x = 2t^2 + 3$, $y = t^4$, $t = -1$