

Name: \_\_\_\_\_

Practice 2-5, 2-6

Find the derivatives of the following:

1.  $y = (3x-8)^4$

2.  $y = (3x^2+2)^5$

3.  $y = 4(x^2+x-1)^{10}$

7.  $y = \left(\frac{2}{2-x}\right)^2$

8.  $y = \frac{4x}{(x+1)^2}$

9.  $y = \frac{-3}{(x^3-x^2+3)^3}$

13.  $y = \frac{2}{\sqrt{2x+3}}$

14.  $y = \frac{-1}{\sqrt{x+1}}$

15.  $y = \sqrt{\frac{3x}{2x-3}}$

18.  $y = (x^2+2x-6)^2(1-x^3)^2$

4.  $y = \frac{\sin x}{x}$

5.  $y = \frac{x}{\sin x}$

6.  $y = x^3 \sin^2 x$

For each of the following, find the equation of the tangent line at the indicated point.

19.  $y = \sqrt{x^2+2x+8}$  at  $(2,4)$

20.  $y = \sqrt[3]{3x^3+4x}$  at  $(2,2)$

Given the following information, find the value of the derivative of the functions at  $x=3$ . Be careful, not all the information is needed to calculate these. Answers are next to the problem.

$x$	$f(x)$	$g(x)$	$f'(x)$	$g'(x)$
3	1	8	-3	-5
6	3	-2	4	5
8	-1	3	$\pi$	4
1	2	-6	5	0

25.  $\frac{g(x)}{f(x)}$

26.  $(f(x))^2$

27.  $\frac{1}{g(x)}$

28.  $\sqrt{f(x)}$

29.  $\sqrt{f(x)+g(x)}$

30.  $f^3(x)g(x)$

Find  $y'$

10.  $y = \sqrt{\sin x + 2}$

11.  $y = \tan \sqrt{3x-1}$

12.  $y = \sec(x^2 - 2x + 3)$

Find the equation of the tangent line to the following curves at the indicated point.

16)  $y = \sin x \cos x$  at  $(0,0)$

17)  $y = \frac{2x}{\cos x}$  at  $(0,0)$