AP Calculus AB
Unit 3 Review

Name: _____
Date: _____ Block: _____

Directions: Find the derivative of the function.

1.) $y = -3x^2$

2.) $f(x) = 2x^4 - 3x$

3.) $f(x) = \frac{2}{x^2} - \frac{1}{x}$

4.) $g(x) = (x^2 + 2)(x^3 + 1)$

5.) $y = \frac{5x^2+2x-6}{3x-1}$

6.) $H(x) = e^{x^2} \sin x$

7.) $f(x) = \frac{\tan(2x)}{e^x}$

8.) $y = \csc^3(x^2)$

9.) $y = \cot^4(x^2 + 3x)$

10.) $xy + \sin(y) = x^2$

11.) $y = \ln(2x + 4)^3$

12.) $y = x^2 \tan^5(x)$

13.) $f(x) = \log_5(2 + \cos(x))$

14.) $y = (\cos x)^x$

15.) $y = x\left(\sqrt[4]{1 - x^3}\right)$

16.) $f(x) = \frac{e^{\tan 4x}}{4x}$

17.) $h(x) = 10^{\sin x^3}$

18.) $y = (\sin x)^{\tan x}$

19.) $f(x) = x \tan^{-1}(3x)$

20.) $g(x) = \arcsin(2^x)$

21.) $y = \cot x \cos^2 x + \cot x \sin^2 x$

22.) Find slope of the tangent line for: $f(x) = \sin x \sec x$ at $x = \frac{\pi}{4}$

23.) Find the equation of the line tangent to the equation $x^2 - y^2 = 9$ at the point $(5, 4)$

24.) Find the point(s) where the slope of the tangent line to the equation $f(x) = \frac{4}{2x-1}$ is $-\frac{1}{2}$.

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

25.) If the function h is given by $h(x) = \frac{f(x)}{g(x)} + x$, find $h'(1)$.

26.) If the function r is given by $r(x) = -2f(x)g(x)$, find the equation of tangent line to $r(x)$ at $x = 2$.

27.) If the function v is given by $v(x) = \frac{f(x)-1}{f(x)}$, find the slope of the line normal to v at $x = 3$.

28.) If the function w is given by $w(x) = xf(x)$ and $w'(4) = 9$, find $f'(4)$.