AP Calculus AB Name: _____

Beginning Derivatives Practice

HW 2-6

Differentiate.

1) $y = 3x^5 - 2x^3$

2) $y = 2\sqrt{x}$

3) $y = \frac{2}{x^3}$

4) $y = \frac{x+3}{x}$

5) $f(x) = \pi^3$

6) $f(x) = \sqrt[5]{x^2}$

7) $y = \frac{2}{3}x^{1/2} + 6$

8) $y = \frac{\sqrt{x}}{x}$

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

10) $y = \sqrt[3]{x^2}(3x+1)$

11) $f(x) = (-5x-2)(x^2+4x)$

12) $y = 5(6x^2-4)$

13) $y = \frac{5x^3-4x+2}{x^2-3}$

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

15) $y = \frac{\sqrt{x}}{5x-2}$

Let's add some trig in!

16) $y = \tan x - \cot x$

17) $y = \cot x + \csc x$

18) $y = \frac{\tan x}{\cos x - 4}$

19) $y = \cos x(\cot x)$

20) $y = 4\sin x \tan x$

21) $y = \frac{\sin x}{x}$

22) $y = (\cos x)(x^2+4)$

23) $y = \frac{2\cos x}{x+1}$

24) $y = 3\sec x \tan x$

25) Find the x coordinates of all points where the tangent line to $f(x) = x + 2\cos x$ is horizontal.

26) Find the equation of the tangent line to $y = \cos x$ at $x = \frac{\pi}{2}$.

27) $f'(x) = 2\sec^2 x + \sin x - 4$. Write a possible equation for $f(x)$.