AP Calculus

No warm up; check homework solutions (only evens posted here; use calcchat for odds please)

4 0

6 $12x^{11}$

8 $-21/x^8$

10 $1/4x^{3/4}$

12 6

14 $2t-3$

16 $4-9x^2$

18 $6x^2+12x$

26 $-6/x^7$

28 $-2\pi/9x^3$

30 $12x^2$

40 $3x^2-2-9/x^4$

42 $8-6/x^3$

44 $2-2/x^3$

46 $8x-5/x^2$

$\frac{1}{x^n} \Leftrightarrow x^{-n}$

Reminders:

- Assessment on Power Rule and IVT review Weds DS
- Q1 ends next Thursday

$\frac{1}{(5x^3)^2} \Rightarrow \frac{1}{25x^6} \rightarrow \frac{1}{25}x^{-6}$

$\cancel{\frac{1}{25x^6}}$

$\cancel{7.\ y=}$ 8.) $y = \frac{3}{x^7}$

$y = 3x^{-7}$

$y' = -21x^{-8}$

$\frac{-21}{x^8}$

Some terminology:

NOTES

derivative : slope of the tangent line.

derivative (as a function): $f(x) \xrightarrow[\text{shortcuts, etc.}]{\text{rules,}} \underbrace{f'(x)}$

takes x's in and outputs slope @ $(x, f(x))$

differentiation : (n.)

the process of taking a derivative

Review:

Write the slope-intercept equation of a line passing through (3,5) and (4,-8)

$$\boxed{y - y_1 = m(x - x_1)}$$

point slope form

- Slope
- Some point ✓

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{-8-5}{4-3} = \frac{-13}{1} = -13.$$

-13 $(3,5)$

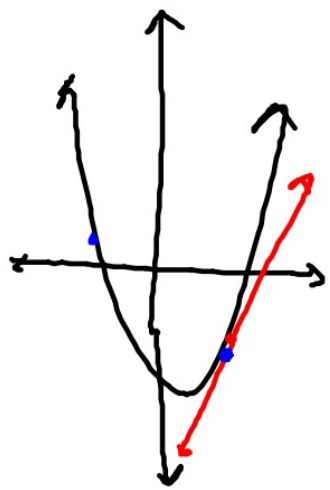
$$y - 5 = -13(x - 3)$$

$$y - 5 = -13x + 39 \rightarrow y = -13x + 44$$

Workin on my tan lines

$y = mx + b$ / $y - y_1 = m(x - x_1)$

ex/ Find the equation of the tan line to $f(x) = x^2 - 3x - 5$ at $x = 2$.



① find the point. $(2, -7)$

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

$4 - 6 - 5$

② find the slope. (derivative)

$f'(x) = 2x - 3$

$f'(2) = 2(2) - 3 = 4 - 3 = 1$

③ mix and serve.

$y - -7 = 1(x - 2)$

#1-4: use $\lim_{\Delta x \to 0} \frac{f(x+\Delta x) - f(x)}{\Delta x}$

#5-16. use power Rule
(rewrite if needed)

5.)

ex/ Ax^n

$f(x) = 3 + 5x^{-4}$

$f'(x) = 0 + -20x^{-5}$

$= \frac{-20}{x^5}$