Classwork 35

1. Write **the limit** for the derivative of each function, but do not find the answer. **(Just set it up)**

a) $f(x) = 6x^5$ b) $f(x) = 3x + 1$ c) $f(x) = 1/x + x$

2. Write an equation of the line that goes through (5, 7) and has a slope of 3/2. **(wow, math A!!)**

3. a) Find the slope of the curve $y = x^3 - 4x^2 + x + 2$ at the point (3, -4).

    b) Find the equation of the tangent line at (3, -4) and use the calculator to show you are right.

4. a) When does the function $y = x^3 + 6x^2 - 7x - 4$ have a slope of 2 ?

     b) Find the equation of a tangent line to one of those points and use the calculator to show you are right.

5. Fill in the box with the missing exponent. (Yes, I know this is review. :>)

a. $3^4 \cdot 3^{\boxed{}} = 3^9$

b. $5^2 \cdot 5^{\boxed{}} = 5^{10}$

c. $4^3 \cdot 4^{\boxed{}} = 4^5$

d. $6^5 \cdot 6^{\boxed{}} = 6^0$

e. $2^4 \cdot 2^{\boxed{}} = 2^0$

f. $x^1 \cdot x^{\boxed{}} = x^0$

6. Based on your answers to (d), (e), and (f), what does a negative exponent have to mean?

Write a formula for X^{-n} .

7. Find the derivative of $f(x) = \dfrac{1}{x}$ using the definition.

8. Find the derivative of $f(x) = \dfrac{1}{x^2}$ using the definition.

Practice Problems

1. a) When does the graph of $y = x^3 + 3x$ have a slope of 12?

    b) Find the equation of a tangent line to one of your answers from (a).

2. What is the slope of $y = 1/3x^6 - 6x + 1$ at $x = 2$?

3. Find the derivative of $y = \dfrac{1}{x^3}$ using the rule.