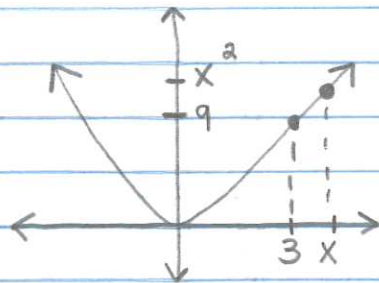


# Slopes Cont



$$f(x) = x^2$$

$$f(3) = 3^2 = 9$$

secant slope

$$\frac{f(x) - f(3)}{x - 3} = \frac{x^2 - 9}{x - 3}$$

tangent slope

$$\lim_{x \rightarrow 3} m = \lim_{x \rightarrow 3} \frac{f(x) - f(3)}{x - 3} = \frac{x^2 - 9}{x - 3}$$

rule

m
2 → 4
3 → 6
10 → 20
0 → 0

$$\frac{\cancel{(x-3)}(x+3)}{\cancel{x-3}}$$

$$3 + 3 = 6 \text{ tangent slope}$$

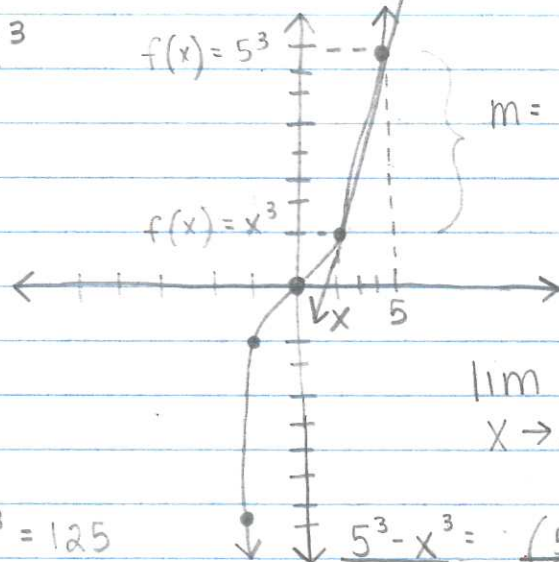
# Slopes Cont

1/15/15

$$f(x) = x^3$$

x	f(x)
-2	-8
-1	-1
0	0
1	1
2	8

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



$$m = \frac{\text{secant slope}}{f(5) - f(x)} = \frac{5^3 - x^3}{5 - x}$$

tangent slope

$$\lim_{x \rightarrow 5} m = \frac{5^3 - x^3}{5 - x}$$

$$f(5) = 5^3 = 125$$

$$\frac{5^3 - x^3}{5 - x} = \frac{\cancel{(5-x)}(5^2 + 5x + x^2)}{\cancel{5-x}}$$

rule

$$3(x)^2 = y$$

$$3(5^2) = 75$$

$$3(2^2) = 12$$

$$3(10^2) = 100$$