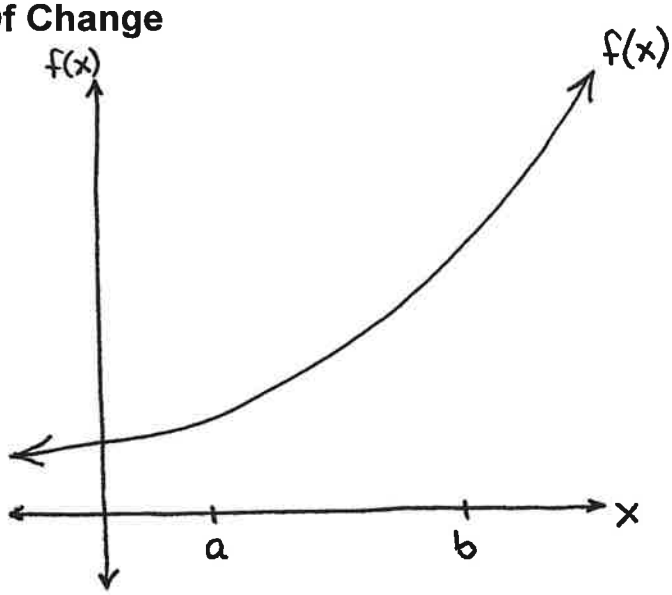
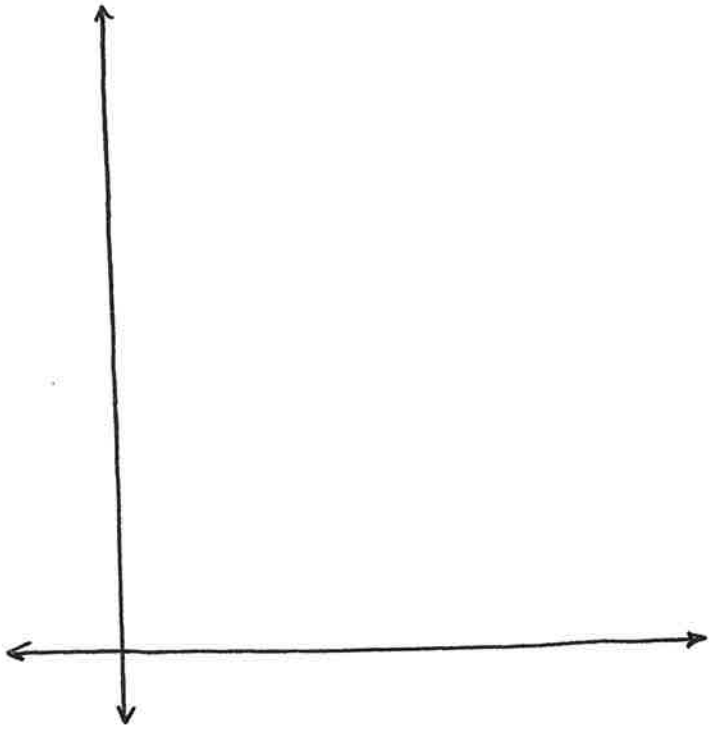
MATH 1325
Chapter 11.3: Rates Of Change

FIND THE AVERAGE RATE OF CHANGE OF $f(x)$ FROM a TO b.



FIND THE AVERAGE RATE OF CHANGE OF $f(x) = x^2 + 4x + 5$ FROM -2 TO 3.

FIND THE EXACT RATE OF CHANGE OF $f(x) = 2x^2$ AT $x = 10$.



EXACT RATE OF CHANGE
INSTANTANEOUS RATE OF CHANGE

$$\lim_{\Delta x \to 0} \frac{f(x+\Delta x) - f(x)}{(x+\Delta x) - (x)} = \lim_{\Delta x \to 0} \frac{f(x+\Delta x) - f(x)}{\Delta x}$$

VELOCITY AT TIME $t = a$ FOR POSITION $s(t)$:

$$\lim_{h \to 0} \frac{s(a+h) - s(a)}{h}$$ IF LIMIT EXISTS

GIVEN $s(t) = 2t^2 - 5t + 40$

FIND THE AVERAGE VELOCITY FROM 2 SECONDS TO 4 SECONDS.

FIND THE INSTANTANEOUS VELOCITY AT 4 SECONDS.

GIVEN $C(x) = -.2x^2 + 8x + 40$ AND $0 \leq x \leq 20$

FIND THE AVERAGE RATE OF CHANGE COST FOR PRODUCING BETWEEN 5 AND 10 ITEMS.

FIND THE INSTANTANEOUS RATE OF CHANGE COST FOR PRODUCING 5 ITEMS.

MARGINAL: RATE OF CHANGE