

2 data points

#40  $(0, 35)$

$(11, \cancel{35})$   
20

Step 1  $m = \frac{35 - 20}{0 - 11} = \frac{15}{-11}$

Step 2

$(11, \underline{20})$

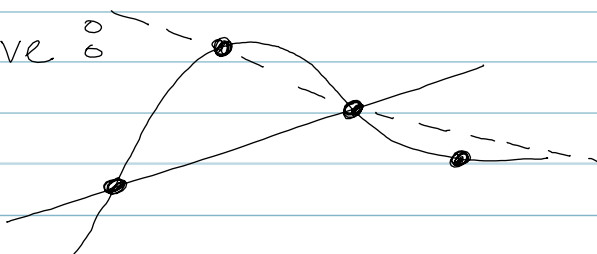
Thus, DNE b/c we do not have both positive and negative sides of the limits

### Section 3.4 Average rate of $\Delta$ (change)

Define: average rate of change = slope

Formula  $\frac{y_2 - y_1}{x_2 - x_1} = \frac{\Delta y}{\Delta x} = \frac{f(x_2) - f(x_1)}{x_2 - x_1}$

Example of curve:



### HW Questions - Review

#6

x Kilos	1	2	3
C(x) Pounds	2.2	3.3	4.0

Interval:  $[1, 3]$

ending x  
starting x

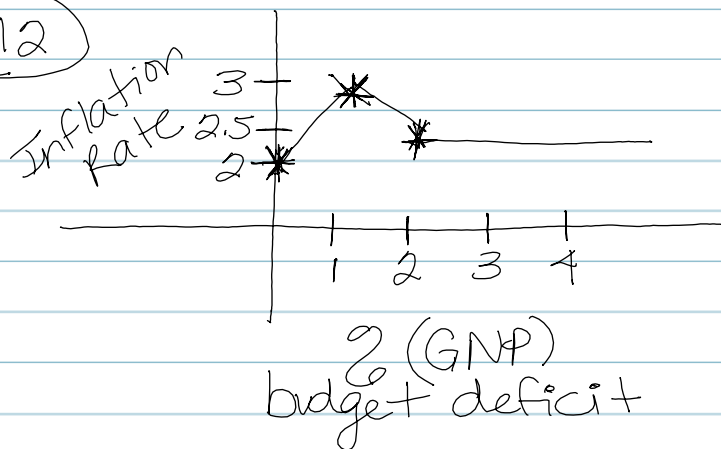
$C(3) = 4.0$   
 $C(1) = 2.2$

average rate of change  $\frac{C(3) - C(1)}{3 - 1}$

$= \frac{4.0 - 2.2}{3 - 1}$

$m = 0.9$

#12



Interval  $[0, 4]$

$(4, 2.5)$   
 $(0, 2)$

$$m = \frac{\Delta y}{\Delta x} = \frac{2.5 - 2}{4 - 0} = \frac{.5}{4}$$

$m = .125$  average rate of  $\Delta$

#18  $f(x) = 3x^2 - \frac{x}{2}$ ; Intervals  $[3, 4]$

Step 1  $f(4) = 3(4)^2 - \frac{4}{2} = 3(16) - 2 = 46$

Step 2  $f(3) = 3(3)^2 - \frac{3}{2} = 27 - \frac{3}{2} = 25.5$

Step 3 Data points  $(4, 46)$   
 $(3, 25.5)$

Step 4  $\frac{\Delta y}{\Delta x} = \frac{46 - 25.5}{4 - 3} = \frac{20.5}{1} = 20.5$   
Average rate of  $\Delta$  is increasing.