Homework 2.1

① Average rate of change is slope then

$m = \frac{\Delta y}{\Delta x} = \frac{4-1}{-3-4} = \frac{3}{-7}$

Average Δ

② $y = \sqrt{x+4}$ & $P(4,6)$ &

$Q(x, \sqrt{x+4})$

$m = \frac{f(x)-f(a)}{x-a}$ where

$m = \frac{\sqrt{x}+4-6}{x-4} \Rightarrow \frac{\sqrt{x}-2}{x-4}$

$m(4.1) = 0.248$

$m(4.01) = 0.249$

$m(3.9) = 0.251$

$m(3.99) = 0.250$

Then approx is 1/4 or 0.25

④ $f(t) = 20t - 15t^2$; $P(2, f(2))$

$m = \frac{f(t)-f(2)}{t-2}$

$m = 20t - 15t^2 + 20/t - 2$

$m(0.1+t_0) = -40.15$

$m(.005+t_0) = -40.075$

$m(.002+t_0) = -40.03$

$m(.001+t_0) = -40.015$

Approx $= -40$

③ $m = \frac{\Delta y}{\Delta x}$; $P(0.8601, 5.3656)$

$Q(0.8599, 5.367151)$

$m = \frac{5.367151 - 5.3656}{0.8599 - 0.8601} \approx$

-7.52

Small assignment so there isn't anything else.