Quiz 1

Name: Key

1. [6 pts] For the following functions, compute the average rate of change on the indicated intervals.

   (a) $f(t) = e^t$ over the interval $[-2, -1]$. (b) $g(x) = \frac{1}{x}$ over the interval $[2, 4]$.

$\frac{\Delta f}{\Delta t} = \frac{f(-1) - f(-2)}{(-1) - (-2)}$

$= \frac{e^{-1} - e^{-2}}{+2-1} = \frac{e^{-1} - e^{-2}}{+1}$

$= e^{-1} - e^{-2}$

≈ 0.233

$\frac{\Delta g}{\Delta x} = \frac{\frac{1}{4} - \frac{1}{2}}{4 - 2}$

$= \frac{-1/4}{2}$

$= -1/8$

2. [4 pts] Find the secant line for the function $r(t) = -3t^3 + 4$ over the interval $[0, 1]$.

$y = mt + b$

$m = \frac{\Delta r}{\Delta t} = ARC_{[0,1]} \quad \frac{r(1) - r(0)}{1 - 0} = \frac{(-3(1)^3 + 4) - (-3(0) + 4)}{1}$

$= \frac{-3 + 4 - 4}{1}$

$= -3.$

$\Rightarrow y = -3t + b.$

Use pt. $(0, 4) \Rightarrow b = 4.$

$y = -3t + 4$