

Name:

Section:

Follow the instructions in each problem.

Show supporting work, not just a final answer, to receive credit on a problem.

1. (5 pts) Jessica finds the demand function for her new iPhone app is $x = -3p + 9$, where p is price in dollars and x is thousands of downloads. What is her elasticity of demand when $p = \$1$. Give an interpretation of your answer.

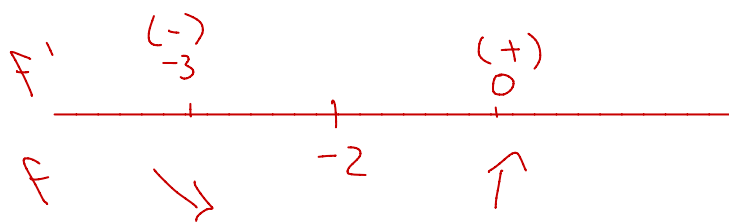
$$E = -\frac{dx}{dp} \cdot \frac{p}{x} = -(-3) \cdot \frac{p}{-3p+9} = \frac{3p}{-3p+9}$$

$$p=1 \Rightarrow E = \frac{3}{-3+9} = \frac{3}{6} = \frac{1}{2}$$

inelastic; when price \uparrow by 2%, demand \downarrow by 1%

2. (5 pts) Let $f(x) = x^2 + 4x + 5$. Use the first derivative to determine where $f(x)$ is increasing, where it is decreasing and the location of any relative minima or maxima.

$$f'(x) = 2x + 4 = 0 \Rightarrow x = -2$$



decreasing: $(-\infty, -2)$
 increasing: $(-2, \infty)$ \Rightarrow local min @ $x = -2$