

Basic Calculus /Math 130

Fall 2016

Name.....GUST#.....

Time allowed 50 min. Calculators are allowed.

1. Use the **definition of derivative (four step method)** to find $f'(x)$.

$$f(x) = \frac{2}{x} + 1$$

(6 p.)

2. The price function is given

$$p(x) = 25 - 0.05x$$

- a) Find the **marginal** revenue function;

- b) find the **average** revenue function .

(6 p.)

3. Find the limit

a. $\lim_{x \rightarrow 2} \frac{x^2 + x - 6}{x - 2}$

(6 p.)

b. $\lim_{x \rightarrow \infty} \frac{x - 6}{x^2 - 2}$

c. $\lim_{x \rightarrow 2} \frac{x - 6}{x - 2}$

4. Find the derivative.

a. $f(x) = \frac{2}{x^3} - 5x^{\frac{2}{3}} - 3\sqrt{x} + 2$

(6 p.)

b. $f(x) = \frac{x}{4} + 5\sqrt[3]{x^2} + \frac{1}{4}$

5. Determine where the function is continuous. Express the answer in interval notation.

$$f(x) = \begin{cases} \sqrt{x} & \text{if } x \leq 4 \\ x^2 - x + 1 & \text{if } x > 4 \end{cases}$$

(6 p.)