

No graphing calculators are allowed on this quiz. Please read each question carefully, follow directions and clearly mark your solutions. **Show your work for full credit.**

1. (8 points) Find the interval(s) where the function is increasing or decreasing and concave up or down. Does the function have any relative minimum or relative maximum?

(a) $f(x) = x^3 - 3x^2$

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

2. (2 points) $C(x)$ is the total cost of producing x units of a particular commodity. Assume $C(x)$ is in dollars.

$$C(x) = \frac{2}{3}x^3 - 2x + 3.$$

Find and interpret the marginal cost when $x = 10$.