

Name : _____

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1. Let $f(x) = x^2 - 4x + 1$. Find
 - (a) $f(3) =$
 - (b) $f(a) =$
 - (c) $f(a + 1) =$
2. A manufacturer has a monthly fixed cost of \$30,000 and a production cost of \$25 for each unit produced. The product sells for \$40 per unit. The manufacturer produces x units per month. In this case,
 - (a) the cost function $C(x) =$
 - (b) the revenue function $R(x) =$
 - (c) the profit function $P(x) =$
3. Find the following limits:
 - (a) $\lim_{x \rightarrow 1} x^2 - 4x + 4 =$
 - (b) $\lim_{x \rightarrow 1} \frac{x^2 - 1}{x - 1} =$
 - (c) $\lim_{x \rightarrow \infty} \frac{5x^3 + 5x^2 + 10}{2x^3 + 3x^2 - 7x} =$
 - (d) $\lim_{h \rightarrow 0} \frac{(x+h)^2 - x^2}{h} =$
4. For the following pair of supply and demand equations, where x represents the quantity demanded in units of a thousand and p the unit price in dollars, find the equilibrium quantity and price:

$$p = 0.2x^2 + 2x + 60, \quad p = -0.4x^2 - 4x + 180.$$