$\qquad$

Directions: Use $C(x)=34000+4500 x+5 x^{\frac{3}{2}}$ as a cost function with $x$ representing a single unit to answer the following questions

1. Determine the cost of producing 2000 units
2. Determine the average cost of producing 2000 units
3. Determine the marginal cost of producing 2000 units
4. What production level will minimize average production cost?

Directions: You are given a revenue function $R(x)=240 \sqrt{x}$ and $C(x)=9 x^{2}+12 x$ with $x$ representing 500 units
5. State each of the following:
a. Marginal cost function
b. Average cost function
c. Marginal revenue function
d. Marginal profit function

Directions: You are given a revenue function $R(x)=240 \sqrt{x}$ and $C(x)=9 x^{2}+12 x$ with x representing 500 units
6. Determine each of the following
a. What is the average cost of producing 4000 units,? explain your answer
b. What is the marginal cost of producing 4000 units,? explain your answer
c. What is the marginal revenue of producing 4000 units,? explain your answer
d. What is the number of units, if any, that will minimize the average cost of producing $x$ units? (round to nearest UNIT not $x$ value)
e. If there is a production level that will maximize the profit of producing $x$ units (round to nearest UNIT not $x$ value)

Directions: You are given a revenue function $R(x)=240 \sqrt{x}$ and $C(x)=9 x^{2}+12 x$ with x representing 500 units
7. Sketch a graph with $R(x)$ and $C(x)$ on the same axes
8. Label any points of intersection of these functions and any intercepts of the graph
9. What does it mean when $R(x)>C(x)$ ? Hint Profit?
10. What does it mean when $R(x)<C(x)$ Hint Profit?

