Math 220 Quiz 1 (take home) Name/Sec. # _____

- *You may use only your notes/readings – nothing and no one else, internet or in person.*
- *Hand in at the start of class on Friday.*
- Show all work; final answers only receive no credit. Work must be neat and legible.

1. A manufacturer sells a certain product for $15 per unit. Total costs consists of a fixed overhead of $800 plus production costs of $6 per unit.
   a) Write the *cost function* $C(x)$ and *revenue function* $R(x)$.
   b) Draw *accurate graphs* of $C(x)$ and $R(x)$ on same plane; label the functions and *intercepts*.
   c) Compute the number of units the manufacturer must sell to break even. Does your graph support your answer? If not, what needs adjusting to make it so?
   d) Write the *profit function* $P(x)$ for this problem.
   e) Graph $P(x)$ on the same axes as $C(x)$ and $R(x)$.
   f) Does the graph support your answer to (c)?
   g) How many units must be sold for the manufacturer to realize a profit of $1,200?
   h) Finally, what is the *marginal cost of production* for this business and what does it mean?

2. Suppose for a *different* business that *marginal revenue* at $x = 19$ units is $11. That is, $MR(19) = \$11$. Explain what this means.