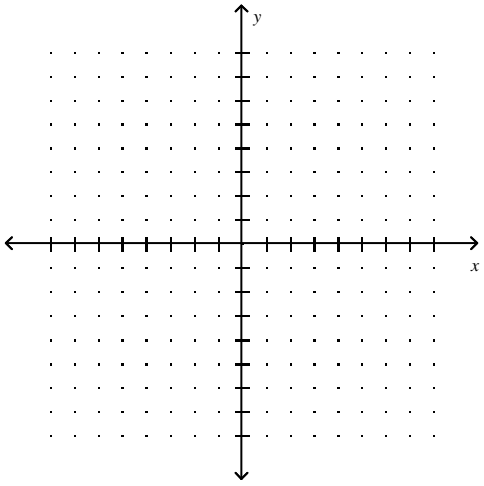
C3L3 Notes

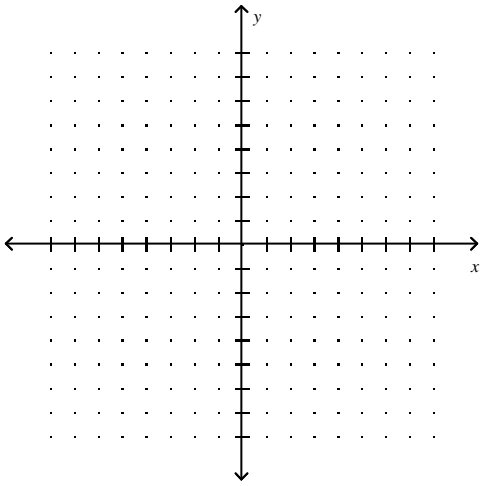
Quadratic Functions and Their Properties

a. Graph each quadratic function by determining whether its graph opens up or down and by finding its vertex, axis of symmetry, y-intercept, and x-intercepts, if any.
b. Determine the domain and the range of the function.
c. Determine where the function is increasing and where it is decreasing.

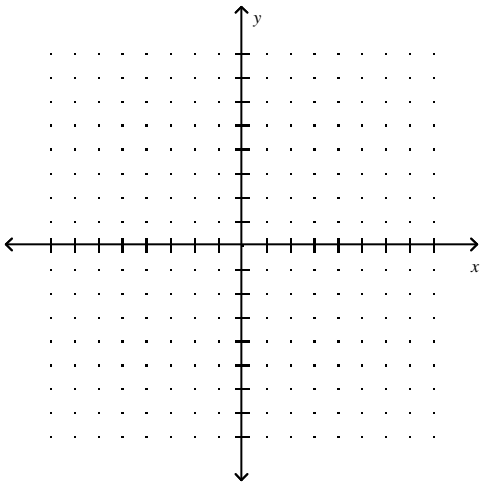
1. f(x) =



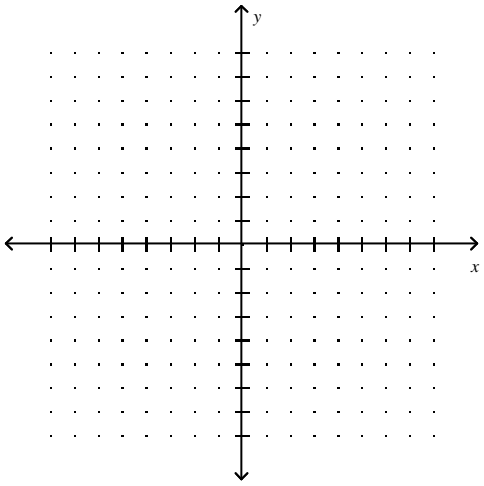
2. f(x) =



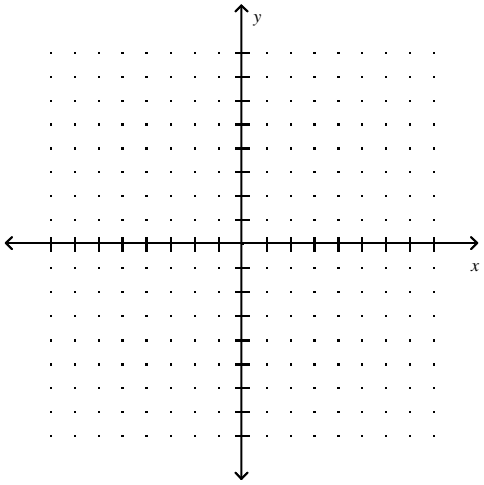
3. f(x) =



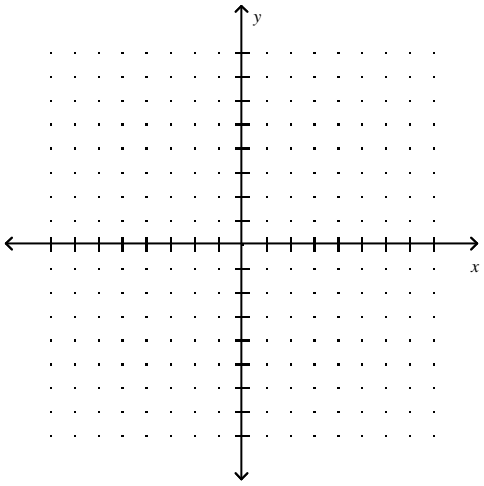
4. f(x) =



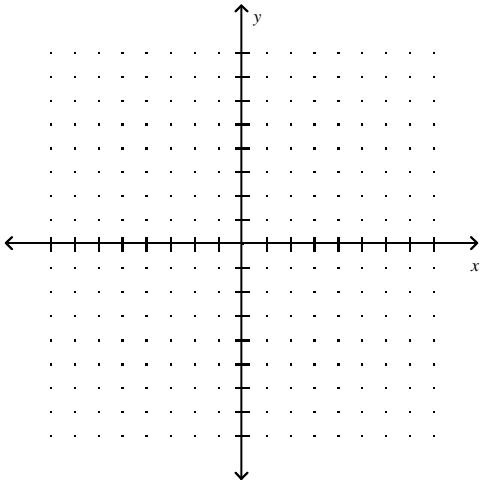
5. f(x) =



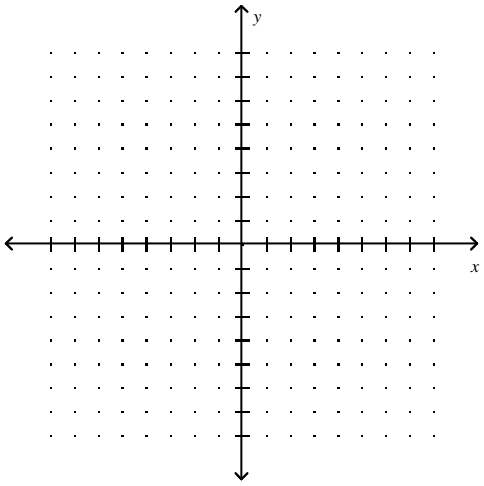
6. f(x) =



7. f(x) =



8. f(x) =



17. Suppose that the manufacturer of a gas clothes dryer has found that, when the unit price is p dollars, the revenue R (in dollars) is

R(p) =

What unit price should be established for the dryer to maximize revenue? What is the maximum revenue. Write answers as complete sentences.

18. The marginal cost of a product can be thought of as the cost of producing one additional unit of output. For example, if the marginal cost of producing the 50th product is $6.20, it cost $6.20 to increase production from 49 to 50 units of output. Suppose the marginal cost C (in dollars) to produce x thousand mp3 players is given by the function

C(x) =

a. How many players should be produced to minimize the marginal cost? Write the answer as a complete sentence.

b. What is the minimum marginal cost? Write the answer as a complete sentence.

19. The monthly revenue R achieved by selling x wristwatches is figured to be R(x) = _____. The monthly cost C of selling x wristwatches is C(x) = _____. Write all answers as complete sentences.

a. How many wristwatches must the firm sell to maximize revenue? What is the maximum revenue?

b. Profit is given as P(x) = R(x) – C(x). What is the profit function?

c. How many wristwatches must the firm sell to maximize profit? What is the maximum profit?