

Practice 13

For use with Section 2-4

Tell whether each function is a quadratic function. For each quadratic function:

a. Find $f(2)$, $f(-2)$, and $f(a + b)$.

b. Graph f .

1. $f(x) = x^2 - 2.5$

2. $f(x) = -x^2 + 3x$

3. $f(x) = \frac{x^2}{4} - 2$

4. $f(x) = 7 + \frac{1}{x^2}$

5. $f(x) = 2x^2 - x + 1$

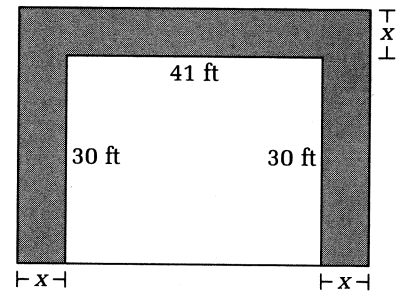
6. $f(x) = \frac{(x + 3)^2}{2}$

7. $f(x) = 5 - x^2$

8. $f(x) = -16x^2 + 6x^3$

9. $f(x) = x^2 - \frac{5}{2}x + 2$

10. Coretta Jones wants to plant shrubbery in an even strip (the shaded region in the diagram) around three sides of her house, which is a rectangle measuring 41 ft by 30 ft. Let x = the width of the planted strip.



- a. Express the total planted area as a function of the width x .
- b. Graph the function you found in part (a).
- c. Suppose the nursery at which Coretta buys the shrubbery tells her that the plants require a total area of 870 ft^2 . What value must x have?
11. Flora Posadas grows peaches and sells them to a produce wholesaler. On July 1, she has 800 bushels that she can sell at \$6.40 per bushel. Suppose that while she waits before selling her crop, the price of a bushel drops by \$.40 per week and she harvests 100 more bushels per week. Let x = the number of weeks she waits before selling.
- a. Express the total income if she waits x weeks as a function of x .
- b. What value of x maximizes this function?
12. **Writing** Choose a value of a in the quadratic function $f(x) = ax^2$, and calculate $f(0)$, $f(1)$, $f(2)$, $f(3)$, and so on. What do you notice about the number sequence $f(1) - f(0)$, $f(2) - f(1)$, $f(3) - f(2)$, and so on? Choose a different value for a and repeat this procedure. Do you notice the same thing about the new numbers?