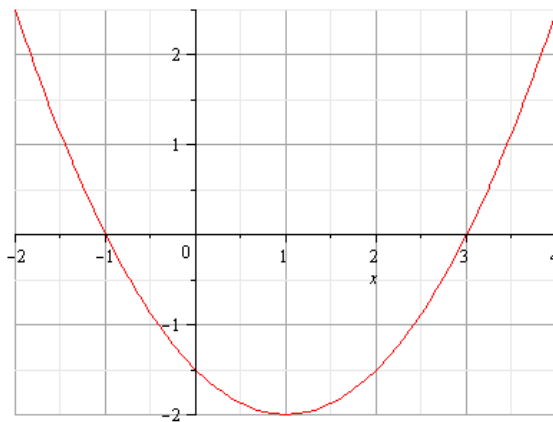


Graded Homework 5

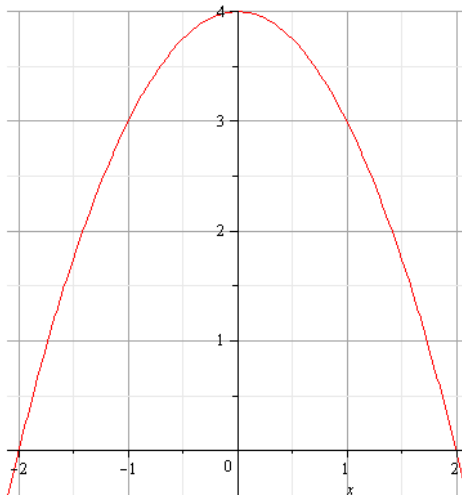
In problems 1 and 2 look at the graph of a parabola and: (see section 11.3; read this section and study the examples)

- Identify the coordinates of the vertex.
- Find the equation of the line of symmetry.
- State whether the parabola opens up or down.
- State for what values of x the parabola is increasing.
- State for what values of x the parabola is decreasing.

1.



2.



Find the coordinates of the vertex and factor: (see p443 for factoring)

3. $y = x^2 - 4x + 3$

4. $y = 2x^2 - 3$

Graph: (See section 11.3, read this section well and study the examples)

5. $y = x^2$

6. $y = -x^2$

7. $y = x^2 + 1$

8. $y = 2x^2$

9. $y = x^2/2$

10. A golf ball is hit into the air, and its height h in feet after t seconds is given by

$$h(t) = -16t^2 + 128t$$

- What is the height of the golf ball when it is hit? [find $h(1)$]
- After how many seconds did the golf ball reach its maximum height? (when did it reach its vertex?)
- Determine the maximum height of the golf ball. (y-value at the vertex)

11. Two of the following equations are not quadratic equations. Identify the letters of these equations.

a. $y = x^2 - 80x + 96$

b. $y = 3x - 6$

c. $y = -4x^2 + 8x - 44$

d. $y = -x^4 - 2x + 6$

Solve for the numerical value of x by graphing or factoring:

12. $y = x^2 - x - 6 = 0$

13. $y = x^2 + 2x - 3$

14. Solve for the numerical value of x if $x^2 = 25$.

15. Solve for the numerical value of x if $(x - 3)^2 = 16$.

Complete the square and solve for the numerical value of x : (see page 740, example 5)

16. $x^2 + 4x = -3$

17. $x^2 - 2x = 24$

18. $4x^2 - 8x - 7 = 0$

19. Solve for v , if $K = 2 m v^2$.

20. Solve for I , if $W = I^2 R$.

Roughly sketch a parabola of the form $y = ax^2 + bx + c$ where: (see page 766)

21. $a > 0$

22. $a < 0$

23. The discriminant is +

24. The discriminant is -

25. The discriminant is 0

Use the quadratic formula to solve the following equations: (see page 754, example 2)

26. $x^2 - 3x + 2 = 0$

27. $2x^2 - x - 4 = 0$

28. $x^2 - 5x + 2 = 0$

29. The width of a rectangular computer screen is 3 inches more than its height. If the area of the screen is 154 square inches, find its dimensions.

30. A pilot flies 500 miles against a 20 mile-per-hour tail wind. On the next day, the pilot flies back home with a 10 mile-per-hour tail wind. The total trip (both ways) takes 4 hours. Find the speed of the airplane without the wind.