Evaluate the power. (Lesson 1.2)

1. \(8^3\)  
2. \((-3)^2\)  
3. \((-4)^4\)

Solve the formula for the indicated variable. Then use the given information to find the value of the variable. (Lesson 1.4)

4. Solve \(A = \frac{1}{2}bh\) for \(b\). Then find the base \(b\) of a triangle with a height \(h\) of 25 centimeters and an area \(A\) of 750 square centimeters.
5. Solve \(C = 2\pi r\) for \(r\). Then find the radius \(r\) of a circle with a circumference \(C\) of 18π feet.

Find the \(x\)- and \(y\)-intercepts of the line with the given equation. (Lesson 2.3)

6. \(4x - 8y = 10\)  
7. \(x + 5y = 1\)

8. Tell whether the data in the table show direct variation. If so, write an equation relating \(x\) and \(y\). (Lesson 2.5)

<table>
<thead>
<tr>
<th>(x)</th>
<th>-5</th>
<th>-3</th>
<th>-1</th>
<th>1</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>(y)</td>
<td>-15</td>
<td>-9</td>
<td>-3</td>
<td>3</td>
<td>9</td>
</tr>
</tbody>
</table>

Find the product. If it is not defined, state the reason. (Lesson 3.6)

9. \([-3\ 1]\begin{bmatrix}2 & 1 \\ -3 & 4\end{bmatrix}\)  
10. \[
\begin{bmatrix}
3 & 0 \\
-2 & -1
\end{bmatrix}
\begin{bmatrix}
5 & -5 \\
0 & 1
\end{bmatrix}
\]

Evaluate the determinant of the matrix. (Lesson 3.7)

11. \[
\begin{bmatrix}
1 & 3 \\
2 & -1
\end{bmatrix}
\]
12. \[
\begin{bmatrix}
5 & 4 & 4 \\
2 & -3 & 1 \\
3 & 7 & 2
\end{bmatrix}
\]
13. \[
\begin{bmatrix}
3 & -5 & -1 \\
-5 & 13 & 0 \\
-1 & 0 & 1
\end{bmatrix}
\]

Use the quadratic formula to solve the equation. (Lesson 4.8)

14. \(t^2 - 3t - 4 = 0\)  
15. \(2j^2 - 2j = 3j - 3\)

16. Write a quadratic function whose graph has the given characteristics. (Lesson 4.10)
   Vertex at \((-2, -3)\) and passes through the point \((1, 15)\)

Use direct substitution to evaluate the polynomial function for the given value of \(x\). (Lesson 5.2)

17. \(f(x) = 3x^3 + x - 3; x = 2\)  
18. \(f(x) = 2x^2 + 3x - 1; x = -1\)

Factor the polynomial completely using any method. (Lesson 5.4)

19. \(x^3 + 2x^2 - 5x - 6\)  
20. \(8x^3 - 64\)
Evaluate the expression without using a calculator. (Lesson 6.1)

21. \(125^{2/3}\sqrt[4]{256}\)  
22. \(\sqrt[8]{81}\)  
23. \((\sqrt[4]{2^4})^{-3}\)

Graph the function. (Lessons 7.1, 7.2)

24. \(y = 2.5^x + 1\)  
25. \(h(x) = 6(0.36)^x\)  
26. \(f(x) = 3^x - 1\)  
27. \(y = -(2.5)^x\)

Identify the x-intercept(s) and vertical asymptote(s) of the graph of the function. (Lesson 8.3)

28. \(f(x) = \frac{3x^2}{2x^2 - 8}\)  
29. \(y = \frac{x^2 + x - 2}{x + 3}\)

Multiply the expressions. Simplify the result. (Lesson 8.4)

30. \(\frac{(x^2 - 9x + 20)}{x^2 - 25} \cdot (x^2 + 4x - 5)\)  
31. \(\frac{12x^3y^2}{x^3} \cdot \frac{xy}{3x^3y^2}\)

Write the standard form of the equation of the circle with the given radius and whose center is the origin. (Lesson 9.3)

32. \(6\)  
33. \(3\)  
34. \(\sqrt{8}\)

Evaluate the factorial. (Lesson 10.1)

35. \(5!\)  
36. \(2!(3!)\)  
37. \(4(2!)\)

Let \(n\) be a randomly selected integer from 1 to 15. Find the indicated probability. (Lesson 10.5)

38. \(n\) is 3 given that it is odd.  
39. \(n\) is 4 given that it is less than 6.

Find the range and the standard deviation of the data set. (Lesson 11.1)

40. \(10, 3, 5, 6, 4, 5\)  
41. \(1.7, 1.5, 3.0, 2.7, 1.8, 3.2, 2.6\)

42. Find the sample size required to achieve the given margin of error of 9%. Round your answer to the nearest whole number. (Lesson 11.4)

For the sequence, describe the pattern, write the next term, and write a rule for the \(n\)th term. (Lesson 12.1)

43. \(1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \ldots\)  
44. \(2, \frac{3}{2}, \frac{4}{3}, \frac{5}{4}, \ldots\)  
45. \(-1, 1, 3, 5, \ldots\)

Write a rule for the \(n\)th term of the arithmetic series that has the given two terms. (Lesson 12.2)

46. \(a_8 = 10, a_{20} = 58\)  
47. \(a_4 = 13, a_{10} = 31\)  
48. \(a_3 = 8, a_9 = 512\)

Tell whether the sequence is geometric. Explain why or why not. (Lesson 12.3)

49. \(5, 7, 9, 11, \ldots\)  
50. \(27, 9, 3, 1, \ldots\)  
51. \(1, \frac{1}{4}, \frac{1}{16}, \frac{1}{64}, \ldots\)