Evaluate.

1) \((-2)^0 - 2^0\) 
   \(1 - 1 = 0\)  

Evaluate the expression.

2) \(\left(\frac{1}{5}\right)^3 \left(\frac{5}{1}\right)^3 = 5 \cdot 5 \cdot 5 = 125\)

Simplify the expression. Use positive exponents. Assume variables represent nonzero real numbers.

3) \(\frac{r^{-3}}{r^{-8}} = \frac{r^8}{r^3} = r^{8-3} = r^5\)

Use a combination of rules for exponents to simplify. Write answers with only positive exponents. Assume that all variables represent nonzero real numbers.

4) \(\frac{(x^4y^2)^4}{x^5y^2} \cdot \frac{x^{16}y^8}{x^5y^8} = x^{21}y^{10}\)

5) \(\frac{(2p-3q)^2}{3m^3} \cdot \frac{\frac{4p^6}{q^2}}{\frac{3}{m^6}p^6} = \frac{36p^2}{m^3}\)

Perform the division. Write the answer with positive exponents.

6) \(\frac{24x^{11} - 36x^{10} - 24x^9 + 42x^7 + 5x^5}{-6x^9} = \frac{24x^2 - 36x^1 - 24x^0 + 42x^7 + 5x^5}{-6x^9}\)

7) \((32x^8 - 80x^5 + 24x^2) + (8x^2)\)

8) \(550,000\)

Write the number in scientific notation.

9) \(5.899 \times 10^{-5}\)

Write the number without exponents.

10) \(96x^9y^8 + 60x^2y^6 + 84x^7y^4 = 12x^4(8xy^4 + 5y^2 + 7x^5)\)

Factor out the greatest common factor.

11) \(4x^2 - 20x + 18x - 15\)

Factor by grouping.

12) \(x^4 - 1 = (x^2 + 1)(x^2 - 1) = (x+1)(x-1)(x^2+1)\)

Factor completely.

13) \(32a^4b - 50b^3\)

\(2 \cdot (16a^4 - 25b^2)\)

\(2 \cdot (4a^2 + 5b)(4a^2 - 5b)\)
Factor.
14) \(64x^2 - 16x + 1 = (8x - 1)(8x + 1)\)
15) \(8x^2 - 96x + 288 = 8(x^2 - 12x + 36) = 8(x - 6)^2\)

Factor completely.
16) \(x^2 - 9x - 22 = (x - 11)(x + 2)\)
17) \(2x^3 + 2x^2y - 24xy^2 = 2x(x^2 + xy - 12y^2) = 2x(x + 4y)(x - 3y)\)

Factor as completely as possible. If unfactorable, indicate that the polynomial is prime.
18) \(8x^2y^2 - 6xy^2 - 9y^2 = y^2(8x^2 - 6x + 9) = y^2(2x - 3)^2\)
19) \(-x^2 - 2x + 8 = (-1)(x^2 + 2x - 8) = (x + 4)(x - 2)\)

Solve the equation.
20) \(5x^2 - 30x + 40 = 0\)
\[
\begin{align*}
5(x^2 - 6x + 8) &= 0 \\
5(x - 4)(x - 2) &= 0 \\
x &= 4, 2
\end{align*}
\]

Solve the problem.
21) Find three consecutive odd integers such that the sum of all three is 36 less than the product of the smaller two.

Solve the inequality, then graph the solution.
22) \(6(x + 9) - 17x < -3(3x + 2) - 3x\)
\[
\begin{align*}
-20 &< 0 \\
-20 &> 0 \\
&\quad \text{no solution}
\end{align*}
\]

Add or subtract as indicated.
23) \((x^3y^2 + 2x^2y^3 - 5xy - 4) + (x^2y^3 - 4x^3y^2 + 2x + 2)\)
\[
\begin{align*}
2x^3y^2 + 2x^2y^3 - 3xy - 4
\end{align*}
\]

Simplify the expression by combining like terms.
24) \(-3(5t + 8) - (2t + 3) - 3t + 11\)
\[
\begin{align*}
-20t - 16
\end{align*}
\]

Solve the problem.
25) A ladder is resting against a wall. The top of the ladder touches the wall at a height of 12 feet. Find the length of the ladder if the length is 4 feet more than its distance from the wall.

Solve the equation.
26) \(x(x - 3) = 28\)
\[
\begin{align*}
x^2 - 3x &= 28 \\
x^2 - 3x - 28 &= 0 \\
(x - 7)(x + 4) &= 0 \\
x - 7 &= 0 \quad \text{or} \quad x + 4 = 0 \\
x &= 7 \quad \text{or} \quad x = -4
\end{align*}
\]

21) \(X = 7, \ x + 2 = 9, \ x + 4 = 11\)

22) \((-\infty, 4)\)

23) \(-3x^2 + 3x^3 - 3xy - 2x^3 - 2x^2 + y^3 - y^2 - 2\)

26) \(7 - \frac{4}{x}\)

27) \(x = \frac{1}{2} [x + (x + 2)] = \text{sum of two smaller odds}\)
\[
\begin{align*}
x + x + 2 + x + 4 + 3x &= x(x + 2) \\
&= 2x^2 + 2x \\
&= 3x + 36 + 6 \\
&= 3x - 42 \\
&= 3x - 42
\end{align*}
\]

28) \(x = x^2 - 4 - 4 - 16 = \frac{x^2 - 4 - 16}{x - 7} = 0 \quad \text{not odd}\)

29) \(x = 7, \ x = -6 \quad \text{reject, not odd}\)

Distance from wall to ladder = 16 feet
Length of ladder = 20 feet