6.1, 6.2, & 6.4 Review

6.1 Why Do Bees Have Sticky Hair?

Write the letter of each answer in the box containing the exercise number.

Simplify the expression. Write your answer using only positive exponents.

1. \((-9)^0 \)  
   \( \text{Answer: } 1 \)

2. \(4^{-2} \)  
   \( \frac{1}{16} \)

3. \((-6)^3 \)  
   \( -216 \)

4. \(\frac{8^{-3}}{4^0} \)  
   \( \frac{1}{512} \)

5. \(\frac{12^{-2}}{(-13)^0} \)  
   \( \frac{1}{169} \)

6. \(\frac{(9^{-2})}{(3^{-3})} \)  
   \( \frac{1}{27} \)

7. \(15x^0 y^{-2} \)  
   \( \frac{15}{y^2} \)

8. \(21x^{-5} y^0 \)  
   \( \frac{21}{x^5} \)

9. \(\frac{10^{-2} x^{-4}}{y^0} \)  
   \( \frac{1}{100x^4} \)

10. \(\frac{3^{-4} x^0}{y^{-8}} \)  
    \( \frac{y^8}{x^4} \)

11. \(\frac{14x^0 y^{-2}}{2^{-1} z^{-3}} \)  
    \( \frac{14z^3}{y^2} \)

12. \(\frac{S^2 y^{-10}}{S^{-1} z^0 x^{-5}} \)  
    \( \frac{S^3 y^9}{x^5} \)

13. \((x^7)^5 \)  
    \( x^{35} \)

14. \(9^{-12} \cdot 9^4 \)  
    \( \frac{1}{98} \)

15. \(\frac{y^2 \cdot y^4}{y^3} \)  
    \( y^3 \)

16. \((-2x)^4 \)  
    \( 16x^4 \)

17. \(\frac{(x^{11})^{-2}}{x^4} \)  
    \( \frac{121}{x^4} \)

18. \(\left(\frac{1}{3y^2}\right)^{-3} \)  
    \( \frac{27y^9}{1} \)

Answers

A. \(\frac{1}{512} \)
B. \(\frac{1}{216} \)
C. \(y^3 \)
D. \(1 \)
E. \(\frac{1}{100x^4} \)
F. \(\frac{21}{x^5} \)
G. \(\frac{y^8}{81} \)
H. \(\frac{125x^5}{y^{10}} \)
I. \(\frac{1}{144} \)
J. \(\frac{1}{16} \)
K. \(\frac{28x^3}{y^2} \)
L. \(15 \)
M. \(\frac{121}{x^2} \)
N. \(\frac{27y^9}{1} \)

The completed table looks like this:

| 7 | 14 | 2 | 5 | 11 | 4 | 13 | 9 | 16 | 1 | 12 | 6 | 18 | 15 | 8 | 17 | 3 | 10 |
|---|----|---|---|----|---|----|---|----|---|----|---|----|---|----|---|---|---|---|
| THEY | HAVE | HONEYCOMBS |
6.2  Why Did The Mother Skunk Take Her Baby To See The Doctor?

Write the letter of each answer in the box containing the exercise number. Rewrite the expression in rational exponent form.

1. \(\sqrt[1]{8}\)  2. \(\sqrt[2]{43}\)  3. \((\sqrt[3]{9})^5\)  4. \((\sqrt[4]{-51})^{11}\)

Rewrite the expression in radical form.

5. \(19^{1/4}\)  6. \(802^{1/7}\)  7. \((-12)^{2/5}\)  8. \(16^{3/2}\)

Evaluate the expression.

9. \(\sqrt[1]{125}\)  10. \(\sqrt[2]{-32}\)  11. \(243^{1/5}\)  12. \((512)^{1/3}\)

13. \(64^{5/6}\)  14. \((256)^{3/4}\)  15. \((-128)^{3/7}\)  16. \((-125)^{4/3}\)  17. \((\frac{1}{64})^{5/6}\)  18. \((\frac{16}{625})^{3/4}\)

19. \((343)^{-2/3}\)  20. \(\frac{1}{81^{1/4}}\)

21. The volume of a number cube is \(3^6\) cubic millimeters.

Find the length of one side of the cube.

\[V = L \times W \times H\]

\[V = 3^6\]

\[V = 729\]

\[729 = (X \times X \times X)\]

\[X = 9\]
6.4 What Looks Like Half A Lemon?

Write the letter of each answer in the box containing the exercise number.

Evaluate the function when \( t = 4 \). Round your answer to the nearest hundredth.

1. \( y = 275(1 + 0.85)^t \)
   \[ 3221.21 \]

2. \( y = 9(1 + 0.03)^t \)
   \[ 10.13 \]

3. \( f(t) = 16(1.7)^t \)
   \[ 133.63 \]

4. \( p(t) = 8.21(1.09)^t \)
   \[ 11.59 \]

Evaluate the function when \( t = 7 \). Round your answer to the nearest hundredth.

5. \( y = 725(1 - 0.1)^t \)
   \[ 346.77 \]

6. \( g(t) = 360(0.45)^t \)
   \[ 1.35 \]

7. \( r(t) = \left(\frac{11}{12}\right)^t \)
   \[ 0.54 \]

8. \( h(t) = 0.8\left(\frac{3}{5}\right)^t \)
   \[ 0.02 \]

Write a function that represents the situation.

9. A $33,000 vehicle decreases in value by 27% each year.
   \[ y = 33,000(1 - 0.27)^t \]

10. Your hourly wage of $9.56 increases by 3% each year.
    \[ y = 9.56(1 + 0.03)^t \]  \[ \Rightarrow y = 9.56(1.03)^t \]

11. The amount of five fruit flies increases by 12.5% each day.
    \[ y = 5(1 + 0.125)^t \]

12. A $4000 deposit that earns 2% annual interest compounded semiannually after \( t \) years.
    \[ y = 4000(1 + \frac{0.02}{2})^{2t} \]  \[ y = 4000(1 + 0.01)^{2t} \]  \[ y = 4000(1.01)^{2t} \]