

Math Worksheets

Exponential Equations and Logarithms

 Solve each equation for the unknown variable.

1) $3^{4n} = 243$

2) $5^{3r} = 625$

3) $6^{2n-1} = 216$

4) $16^{2r+3} = 4$

5) $169^{2x} = 13$

6) $7^{-3v-3} = 49$

7) $2^{4n} = 128$

8) $11^{n-1} = 1,331$

9) $\frac{9^{3a}}{3^{2a}} = 729$

10) $13^5 \times 13^{-4v} = 169$

11) $4^{3n} = \frac{1}{64}$

12) $\left(\frac{1}{11}\right)^{2n} = 121$

13) $2,187^{3x} = 3$

14) $13^{5-7x} = 13^{-2x}$

15) $11^{-3x} = 11^{2x-7}$

16) $3^{5n} = 243$

17) $17^{5x+3} = 17^{6x}$

18) $15^{3n} = 225$

19) $4^{-3k} = 512$

20) $8^{-4r} = 8^{-5r+2}$

21) $8^{2x+3} = 8^{5x}$

22) $10^{3x-2} = 100,000$

23) $16 \times 64^{-v} = 128$

24) $\frac{128}{2^{-3m}} = 2^{4m+5}$

25) $14^{-5n} \times 14^{2n+3} = 14^{-2n}$

26) $\left(\frac{1}{9}\right)^{4n+3} \times \left(\frac{1}{9}\right)^{-3n-8} = \left(\frac{1}{9}\right)^{-4n}$

 Solve each problem. (Round to the nearest whole number)

27) A substance decays 16% each day. After 8 days, there are 6 milligrams of the substance remaining. How many milligrams were there initially? _____

28) A culture of bacteria grows continuously. The culture doubles every 4 hours. If the initial number of bacteria is 20, how many bacteria will there be in 13 hours?

29) Bob plans to invest \$11,200 at an annual rate of 3.5%. How much will Bob have in the account after three years if the balance is compounded quarterly? _____

30) Suppose you plan to invest \$8,000 at an annual rate of 5%. How much will you have in the account after 6 years if the balance is compounded monthly? _____

Answers of Worksheets

Exponential Equations and Logarithms

1) $\frac{5}{4}$

2) $\frac{4}{3}$

3) 2

4) $-\frac{5}{4}$

5) $\frac{1}{4}$

6) $-\frac{5}{3}$

7) $\frac{7}{4}$

8) 4

9) $\frac{3}{2}$

10) $\frac{3}{4}$

11) -1

12) -1

13) $\frac{1}{21}$

14) 1

15) $\frac{7}{5}$

16) 1

17) 3

18) $\frac{2}{3}$

19) $-\frac{3}{2}$

20) 2

21) 1

22) $\frac{7}{3}$

23) $-\frac{1}{2}$

24) 2

25) 3

26) 1

27) 24.2

28) 190.27

29) \$12,432.4

30) \$10,792.14