

## Answers of 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?  
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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

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