

**PRACTICE Test 4 Exponents and Exponential Functions****Simplify each expression.**

1)  $-8x^{-3}y^{-2}$  \_\_\_\_\_ (1 pt)

2)  $\frac{21y^{-2}}{3x^{-4}}$  \_\_\_\_\_ (1 pt)

3)  $2 \cdot 4^{-2}$  \_\_\_\_\_ (1 pt)

4)  $\frac{15x^5z^{-2}}{3y^4}$  \_\_\_\_\_ (1 pt)

5)  $\frac{-2x^{-2}z^{-2}}{4x^{-6}y^2}$  \_\_\_\_\_ (1 pt)

6)  $\frac{-2^3x^{-2}}{y^0}$  \_\_\_\_\_ (1 pt)

7)  $(3x^4)(8x^4)$  \_\_\_\_\_ (1 pt)

8)  $(-2x^{-2})(-x^6y)(3y^{-4})$  \_\_\_\_\_ (1 pt)

9)  $\left(3x^{\frac{3}{4}}\right)\left(4x^{\frac{1}{16}}\right)$  \_\_\_\_\_ (1 pt)

10)  $(x^{y+3})(-2y)(-x^{2y+3})$  \_\_\_\_\_ (1 pt)

11)  $(-3x^{-3})^3(y^2)^{\frac{1}{3}}$  \_\_\_\_\_ (1 pt)

12)  $(25x^{-4}y^6)^{-\frac{1}{2}}$  \_\_\_\_\_ (1 pt)

13)  $(6x^6y^6)^{-6}x^{-6}$  \_\_\_\_\_ (1 pt)

14)  $(-4x^{\frac{4}{5}})^{-4}x^{-\frac{4}{5}}$  \_\_\_\_\_ (1 pt)

15)  $\frac{3^7}{3^9}$  \_\_\_\_\_ (1 pt)

16)  $\frac{x^{\frac{2}{7}}}{x^{\frac{3}{7}}}$  \_\_\_\_\_ (1 pt)

17)  $\left(\frac{-3x^{-3}}{-6y^{-5}}\right)^{-7}$  \_\_\_\_\_ (1 pt)

18)  $\left(\frac{2x^{-2}y^{-5}z^4}{-3x^{-1}y^{-5}}\right)$  \_\_\_\_\_ (1 pt)

**Simplify. Write each number in scientific notation**

19)  $(3.1 \times 10^5)(1.2 \times 10^{-4})$  \_\_\_\_\_ (1 pt)

20)  $(6.1 \times 10^{-4})^{-2}$  \_\_\_\_\_ (1 pt)

21)  $\frac{8.3 \times 10^{-2}}{6.1 \times 10^6}$  \_\_\_\_\_ (1 pt)

Complete the equation.

22)  $x^{\frac{2}{5}} \cdot x^{\square} \cdot x^{-\frac{3}{7}} = x^3$  \_\_\_\_\_ (1 pt)

23)  $(x^{-4}y^{-5})^{\square} = x^2y^{\frac{5}{2}}$  \_\_\_\_\_ (1 pt)

Solve each equation.

24)  $5^x = 1$  \_\_\_\_\_ (1 pt)

25)  $12 \cdot 11^x = 1452$  \_\_\_\_\_ (1 pt)

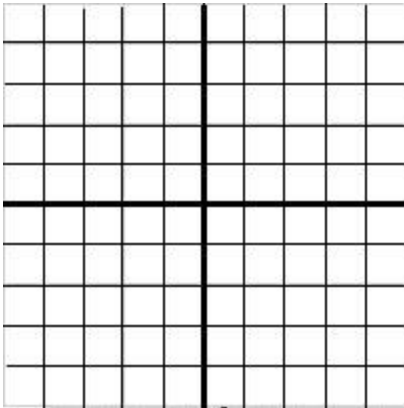
26)  $12^x + 7 = 151$  \_\_\_\_\_ (1 pt)

27)  $-2 \cdot 4^x - 23 = -151$  \_\_\_\_\_ (1 pt)

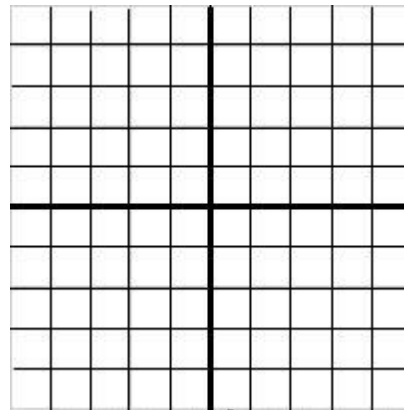
Graph each exponential function.

28)  $f(x) = 3^x + 1$

29)  $y = 0.82^x$



Graph (1 pt)



Graph (1 pt)

Identify the initial amount **a** and the growth factor **b** in the exponential function

30)  $h(x) = 4 \cdot 4.5^x$  a=\_\_\_\_\_, b=\_\_\_\_\_ (2 pt)

Find the balance in each account after the given period.

31) \$3,750 principal earning 2.5% compounded bi-annually, after 3 years. \_\_\_\_\_ (1 pt)

32) \$19,500 principal earning 3.5% compounded bi-monthly, after 6 months. \_\_\_\_\_ (1 pt)

**PRACTICE Test 4 Exponents and Exponential Functions**

Simplify each expression.

1)  $-8x^{-3}y^{-2}$        $\frac{-8}{x^3y^2}$       (1 pt)      2)  $\frac{21y^{-2}}{3x^{-4}}$        $\frac{7x^4}{y^2}$       (1 pt)

3)  $2 \cdot 4^{-2}$        $\frac{1}{8}$       (1 pt)      4)  $\frac{15x^5z^{-2}}{3y^4}$        $\frac{5x^5}{y^4z^2}$       (1 pt)

5)  $\frac{-2x^{-2}z^{-2}}{4x^{-6}y^2}$        $\frac{-x^4}{2y^2z^2}$       (1 pt)      6)  $\frac{-2^3x^{-2}}{y^0}$        $\frac{-8}{x^2}$       (1 pt)

7)  $(3x^4)(8x^4)$        $24x^8$       (1 pt)      8)  $(-2x^{-2})(-x^6y)(3y^{-4})$        $\frac{6x^4}{y^3}$       (1 pt)

9)  $(3x^{\frac{3}{4}})(4x^{\frac{1}{16}})$        $12x^{\frac{13}{16}}$       (1 pt)      10)  $(x^{y+3})(-2y)(-x^{2y+3})$        $2x^{3y+6}y$       (1 pt)

11)  $(-3x^{-3})^3(y^2)^{\frac{1}{3}}$        $\frac{-27y^{\frac{2}{3}}}{x^9}$       (1 pt)      12)  $(25x^{-4}y^6)^{-\frac{1}{2}}$        $\frac{x^2}{5y^3}$       (1 pt)

13)  $(6x^6y^6)^{-6}x^{-6}$        $\frac{1}{46,656x^{42}y^{36}}$       (1 pt)      14)  $(-4x^{\frac{4}{5}})^{-4}x^{-\frac{4}{5}}$        $\frac{1}{256x^4}$       (1 pt)

15)  $\frac{3^7}{3^9}$        $\frac{1}{9}$       (1 pt)      16)  $\frac{x^{-\frac{2}{7}}}{x^{-\frac{3}{7}}}$        $x^{\frac{1}{7}}$       (1 pt)

17)  $\left(\frac{-3x^{-3}}{-6y^{-5}}\right)^{-7}$        $\frac{128x^{21}}{y^{35}}$       (1 pt)      18)  $\left(\frac{2x^{-2}y^{-5}z^4}{-3x^{-1}y^{-5}}\right)$        $\frac{2z^4}{-3x}$       (1 pt)

Simplify. Write each number in scientific notation

19)  $(3.1 \times 10^5)(1.2 \times 10^{-4})$        $3.72 \times 10^1$       (1 pt)

20)  $(6.1 \times 10^{-4})^{-2}$        $2.6874496 \times 10^6$       (1 pt)

21)  $\frac{8.3 \times 10^{-2}}{6.1 \times 10^6}$        $1.360655738 \times 10^{-8}$       (1 pt)

Complete the equation.

22)  $x^{\frac{2}{5}} \cdot x^{\square} \cdot x^{-\frac{3}{7}} = x^3$        $\frac{106}{35}$       (1 pt)

23)  $(x^{-4}y^{-5})^{\square} = x^2y^{\frac{5}{2}}$        $-\frac{1}{2}$       (1 pt)

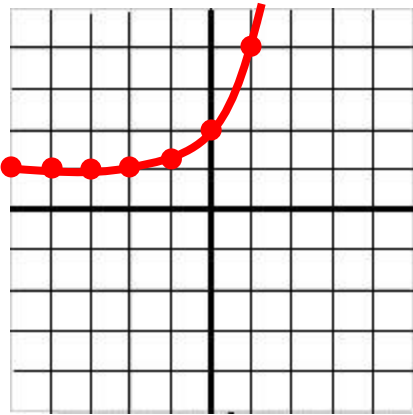
Solve each equation.

24)  $5^x = 1$       **0**      (1 pt)      25)  $12 \cdot 11^x = 1452$       **2**      (1 pt)

26)  $12^x + 7 = 151$       **2**      (1 pt)      27)  $-2 \cdot 4^x - 23 = -151$       **3**      (1 pt)

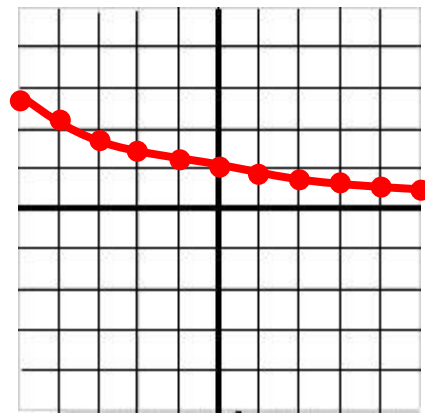
Graph each exponential function.

28)  $f(x) = 3^x + 1$



Graph (1 pt)

29)  $y = 0.82^x$



Graph (1 pt)

Identify the initial amount **a** and the growth factor **b** in the exponential function

30)  $h(x) = 4 \cdot 4.5^x$       **a = 4**      ,      **b = 4.5**      (2 pt)

Find the balance in each account after the given period.

31) \$3,750 principal earning 2.5% compounded bi-annually, after 3 years.      **\$4040.19**      (1 pt)

32) \$19,500 principal earning 3.5% compounded bi-monthly, after 6 months.      **\$19,844.00**      (1 pt)