

1. 6.2% growth

$$106.2\%$$
$$1.062$$

## 2. 5% decay

$$100\% - 5\% = 95\%$$

$$.95$$

3. 60 bacteria that double every hour after 3 hours

$$60(2)^3$$
$$60(8) = \boxed{480}$$

4. 25 bacteria that triple every 30 minutes, after 2 hours

$$25(3)^4$$

$$25(81) = 2025$$

5. \$1200 earning 5% interest compounded annually for 10 years

$$1200 \left(1 + \frac{.05}{1}\right)^{1 \cdot 10}$$

$$\boxed{\$1954.67}$$

6. \$500 earning 5.5% interest compounded semiannually for 3 years

$$500 \left( 1 + \frac{.055}{2} \right)^{2 \cdot 3}$$

$$\boxed{\$588.38}$$

7.  $f(x) = x^2 - 12$

quadratic

8.  $g(x) = 2x + 5$

linear

9.  $h(x) = 3^{x+2}$

exponential

10. The population of India was 952,108,000 in 1996 and was growing at a rate of about 1.3% per year. Predict the population to the nearest hundred thousand, of India in 2000 and in 2010.

$$952108000(1.013)^4$$

$$1,002,600,000$$

$$952108000(1.013)^{14}$$

$$1,140,800,000$$

State whether the given function represents exponential growth or decay and find the y-intercept.

11.  $\frac{1}{3}(2.1)^x$

Exp. growth

$(0, \frac{1}{3})$

$$12. \quad 3.9(0.51)^x$$

exp. decay

$(0, 3.9)$

Write the following exponential equations in logarithmic form.

13.  $15^2 = 225$

$$\log_{15} 225 = 2$$

$$14. 2^4 = 16$$

$$\log_2 16 = 4$$

Write the following logarithmic equations in exponential form.

15.  $\log_5 125 = 3$

$$5^3 = 125$$

$$16. \log_3 81 = 4$$

$$3^4 = 81$$

Solve for  $v$

17.  $\log_v 243 = 5$

$$v^5 = 243$$

$$v = 3$$

$$18. \log_4 v = 3$$

$$4^3 = v$$

$$64 = v$$

19.  $\log_8 4096 = v$

$$8^v = 4096$$

$$v = 4$$

$$20. \log_v 32 = 5$$

$$v^5 = 32$$

$$v = 2$$

Solve each equation for  $x$ . Round your answers to the nearest hundredth.

21.  $10^x = 15$

$$\log_{10} 15 = \boxed{1.18}$$

$$22. 10^x = 0.835$$

$$\log_{10} 0.835 = \boxed{-.08}$$

$$23) \log_{10} 1$$

$$\log_{10} 1$$

$$10^x = 1$$

$$x = 0$$

$$24) \log_{10} 21,050$$

$$\log_{10} 10,000$$

$$10^x = 10,000$$

$$x = 4$$