

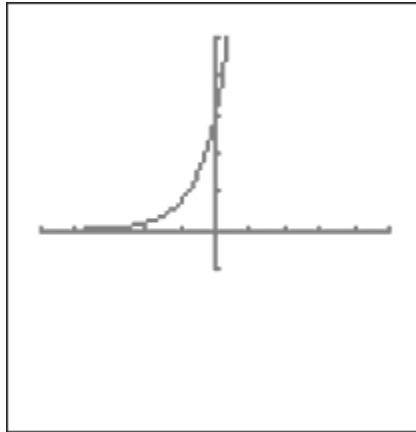
**Unit 5 Review - complete on a separate sheet of paper. Not all of the answers are correct. We will go over tomorrow.**

- Graph the function using a table.  $f(x) = 3 \cdot 4^x$ . Then identify each of the following for the function:  $x$ -intercept(s),  $y$ -intercept, asymptote, domain, range, and interval(s) of increase/decrease.
- Write each expression in rational exponent form.
  - $\sqrt[3]{10}$
  - $\sqrt[4]{a}$
- Write each expression in radical form.
  - $11^{\frac{1}{2}}$
  - $a^{\frac{1}{5}}$
- Solve each exponential equation for  $x$ .
  - $2^{x-5} = \frac{1}{8}$
  - $4^{x-1} = 4,096$
  - $5^{x+3} = \frac{1}{3,125}$
  - $27^x = 3^{2x+1}$
- Brenda deposited \$225 into an account that earns 7.25% compound interest. How much will be in her account after six years? Round to the nearest cent.
- The average attendance at a local high school this year was 950 students. Write a function that represents the average attendance as a function of time in years for each situation.
  - attendance decreases at a rate of 5% per year.
  - attendance increases at a rate of 2.5% per year.
- Thomas counts the number of cars he sees in the parking lot of the school each hour of the day. He counted the following number of cars the first four hours of the day.  
12 cars the first hour      24 cars the second hour      36 cars the third hour      48 cars the fourth hour.  
Write a function represents the number of cars as a function of the number of hours,  $h$ ?
- Write each fraction as a single power.
  - $\frac{1}{1,000}$
  - $\frac{1}{100,000}$
- Write the equation of each function after the translation described.
  - $f(x) = 5x$  after a translation 3 units up
  - $g(x) = 2^x$  after a translation 6 units to the left
  - $h(x) = 4x^2$  after a translation 5 units right and 3 units up
- Describe each graph in relation to its basic function.
  - Compare  $f(x) = (x + 3)^2$  to the basic function  $h(x) = x^2$ .
  - Compare  $f(x) = -2^x + 1$  to the basic function  $h(x) = 2^x$ .
  - Compare  $f(x) = x^3 - 5$  to the basic function  $h(x) = b^x$ .
  - Compare  $f(x) = 2^{-x}$  to the basic function  $h(x) = 2^x$ .
- Taylor earned the following amount each day.  
\$1 of the first day      \$3 on the second day      \$9 on the third day      \$27 dollars on the fourth day  
Write a function represents Taylor's daily earnings as a function of the number of days,  $t$ .
- The formula for an account that earns simple interest is  $P(t) = P_0 + (P_0 \cdot r)t$ . Gregory deposits \$900 into an account that earns 1.5% simple interest annually. How much will be in his account after one year?

**Unit 5 Review - complete on a separate sheet of paper.**

**Answer Section**

1. ANS:



- a. none
- b.  $(0, 3)$
- c.  $f(x) = 0$
- d. all real numbers
- e.  $f(x) > 0$
- f. increasing over the entire domain

PTS: 1

REF: 5.2

NAT: A.SSE.1.a | A.SSE.1.b | A.CED.1 | A.REI.11 | F.IF.4 | F.IF.7.e | F.LE.5 | F.LE.2

TOP: Pre Test

KEY: horizontal asymptote

2. ANS:

a.  $10^{\frac{1}{3}}$

b.  $a^{\frac{1}{4}}$

PTS: 1

REF: 5.5

NAT: N.RN.1 | N.RN.2

TOP: Pre Test

KEY: cube root | index | nth root | radicand | rational exponent

3. ANS:

a.  $\sqrt{11}$

b.  $\sqrt[5]{a}$

PTS: 1

REF: 5.5

NAT: N.RN.1 | N.RN.2

TOP: Pre Test

KEY: cube root | index | nth root | radicand | rational exponent

4. ANS:

a.  $x = 3$

b.  $x = -5$

PTS: 1 REF: 5.6

NAT: A.REI.3 | A.CED.1 | A.CED.2 | N.Q.2 | A.REI.10 | A.REI.11 | N.RN.2 | F.LE.2

TOP: Pre Test

5. ANS:

\$342.43

PTS: 1 REF: 5.1

NAT: A.SSE.1.a | A.SSE.1.b | A.CED.1 | F.IF.3 | F.IF.6 | F.IF.7.e | F.BF.1.a | F.BF.2 | F.LE.1.a | F.LE.1.b | F.LE.1.c | F.LE.2 | F.LE.3 | F.LE.5

TOP: Standardized Test

KEY: simple interest | compound interest

6. ANS:

936

PTS: 1 REF: 5.2

NAT: A.SSE.1.a | A.SSE.1.b | A.CED.1 | A.REI.11 | F.IF.4 | F.IF.7.e | F.LE.5 | F.LE.2

TOP: Standardized Test

KEY: horizontal asymptote

7. ANS:

$$f(h) = 12h$$

PTS: 1 REF: 5.1

NAT: A.SSE.1.a | A.SSE.1.b | A.CED.1 | F.IF.3 | F.IF.6 | F.IF.7.e | F.BF.1.a | F.BF.2 | F.LE.1.a | F.LE.1.b | F.LE.1.c | F.LE.2 | F.LE.3 | F.LE.5

TOP: Standardized Test

KEY: simple interest | compound interest

8. ANS:

a.  $10^{-4}$

b.  $10^{-6}$

PTS: 1 REF: 5.5 NAT: N.RN.1 | N.RN.2

TOP: End Ch Test KEY: cube root | index | nth root | radicand | rational exponent

9. ANS:

a.  $m(x) = 5(x + 3)$

b.  $m(x) = 2^x - 6$

c.  $m(x) = 4(x - 5)^2 + 3$

PTS: 1 REF: 5.3 NAT: F.BF.3 | A.REI.10 | F.LE.2

TOP: Post Test

KEY: basic function | transformation | vertical translation | coordinate notation | horizontal translation | argument of a function

10. ANS:

a. The graph of  $f(x)$  is 3 units to the left of the graph of  $h(x)$ .

- b. The graph of  $f(x)$  is 1 unit up from the graph of  $h(x)$ .
- c. The graph of  $f(x)$  is a reflection of the graph of  $h(x)$  about the vertical line  $x = 0$ .

PTS: 1 REF: 5.3 | 5.4 NAT: F.BF.3 | A.REI.10 | F.LE.2 | F.IF.4 | A.REI.10 | F.LE.2

TOP: Pre Test

KEY: basic function | transformation | vertical translation | coordinate notation | horizontal translation | argument of a function | reflection | line of reflection

11. ANS:

$$f(t) = 3^{t-1}$$

PTS: 1 REF: 5.1

NAT: A.SSE.1.a | A.SSE.1.b | A.CED.1 | F.IF.3 | F.IF.6 | F.IF.7.e | F.BF.1.a | F.BF.2 | F.LE.1.a | F.LE.1.b | F.LE.1.c | F.LE.2 | F.LE.3 | F.LE.5 TOP: Standardized Test

KEY: simple interest | compound interest

12. ANS:

$$P_t = 900 + (900 \cdot 0.015)^1$$

$$P_t = 900 + (13.5)^1$$

$$P_t = 913.5$$

There will be \$913.50 in Gregory's account after one year.

PTS: 1 REF: 5.1

NAT: A.SSE.1.a | A.SSE.1.b | A.CED.1 | F.IF.3 | F.IF.6 | F.IF.7.e | F.BF.1.a | F.BF.2 | F.LE.1.a | F.LE.1.b | F.LE.1.c | F.LE.2 | F.LE.3 | F.LE.5 TOP: Mid Ch Test KEY: simple interest | compound interest