

2017 ALGEBRA 2 2018

WEEKLY ASSIGNMENT SHEET FOR

MAY. 07 TO MAY. 11

FOURTH QUARTER (Q4). WEEK 6 OF 9. (Q4-6)

INSTRUCTOR: MR. ANDRUS.

ROOM: 514

CONTINUING OBJECTIVES:

1. *Improve organization skills.*
2. *Move from memorizing and repeating to applying and thinking.*
3. *Read, write and interpret math statements.*
4. *Use mistakes as opportunities to learn.*
5. *Expand successes and build up weaknesses. Continue to move forward.*

SCCCR STANDARDS:

1. *Exponential and Logarithmic Functions.*
Graph, interpret and solve.
2. *A2.ACE.1*, A2.ACE.2*, A2.ACE.4*, A2.ASE.3*,
A2.FBF.3*
A2.FIF.8*, A2.FLQE.1*, A2.FLQE.2*, A2.FLQE.5**
3. *Review.*

MONDAY (IF YOU DID NOT ATTEND LAST FRIDAY'S CLASS.)→ →

1. After this week, what % of Q4 is complete? What % of S2 grade is complete?
2. Read & study section 4-1. Record 3 key words. Starting on p. 237 do 1 – 11, 29.
3. Read & study worksheet q4-6 Monday. Record 3 key words.
4. Complete all problems on worksheet.
5. Keep this work in your binder.

Check your last week's assignment sheet for Friday's work. Complete this work to prepare for this week's test. ☺☺☺

TUESDAY (IF YOU DID NOT ATTEND CLASS ON MONDAY)→ →

1. Grade/UPDATE/discuss Monday's work.
2. Read & Study section 4-3. Record 3 key words. Starting on p. 253 do 1 – 15, 17 – 30.
3. Read & study worksheet q4-6 Tuesday. Record 3 key words.
4. Complete all problems on worksheet.
5. Keep this work in your binder.

Please complete Monday's assignments. Use them to prepare for the test. ☺☺☺

WEDNESDAY (IF YOU DID NOT ATTEND CLASS ON TUESDAY)→ →

1. Grade/UPDATE/discuss Tuesday's work.
2. Complete all items on test review sheet.
3. Journal: Explain how to convert from exponential to logarithmic form.
Hint: P.249 example 1.
4. Turn in before leaving class.

Please complete Tuesday's assignments and use them to prepare for the test. ☺☺☺

THURSDAY (IF YOU DID NOT ATTEND CLASS ON WEDNESDAY)→ →

1. Grade/UPDATE/discuss Wednesday's work. Review.
2. **Complete Weekly Test Q4-6 in Aleks.**
3. **You may use all note pages on this test.**
4. **If you did not attend class yesterday, your first take will count as your new test problems. Your 2nd take will count as your test score. Additional takes will be updates.**

Please complete Wednesday's assignments and use them to prepare for the weekly test. ☺☺☺

FRIDAY (IF YOU DID NOT ATTEND CLASS ON THURSDAY)→ →

1. Update yesterday's test. Due by the end of class.
2. Problem solving Q4-6. Turn in before leaving class.

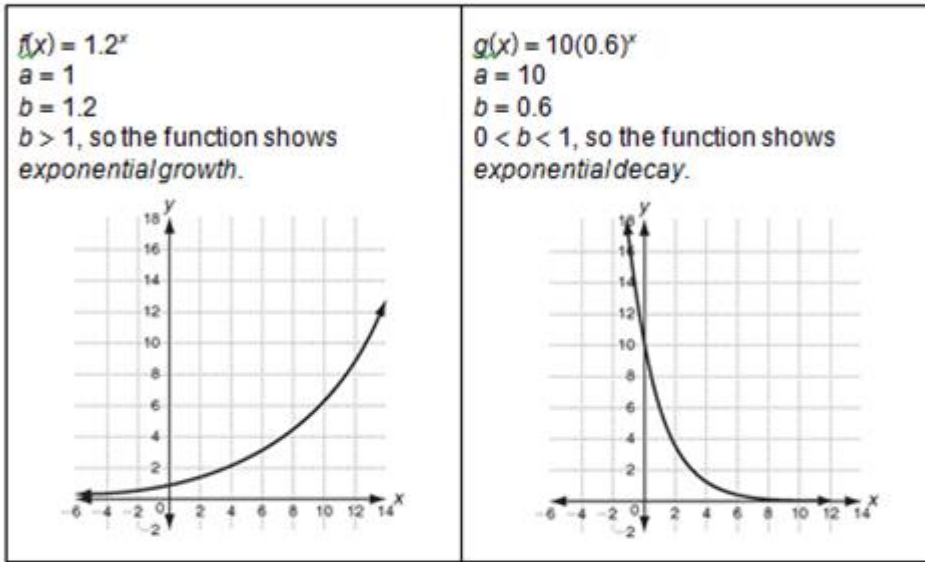
Please complete the weekly test today. ☺☺☺

Exponential Functions, Growth, and Decay

The **base** of an exponential function indicates whether the function shows growth or decay.

Exponential function: $f(x) = ab^x$

- a is a constant.
- b is the base. The base is a constant.
 If $0 < b < 1$, the function shows decay.
 If $b > 1$, the function shows growth.
- x is an exponent.



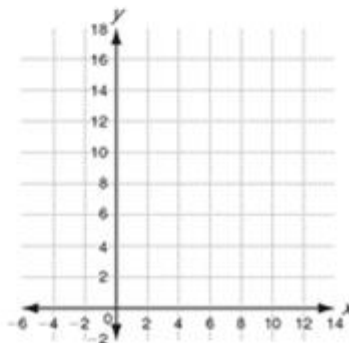
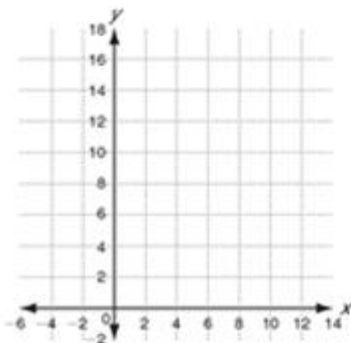
Tell whether each function shows growth or decay. Then graph.

1. $h(x) = 0.8(1.6)^x$

$a =$ _____ $b =$ _____

2. $q(x) = 12(0.7)^x$

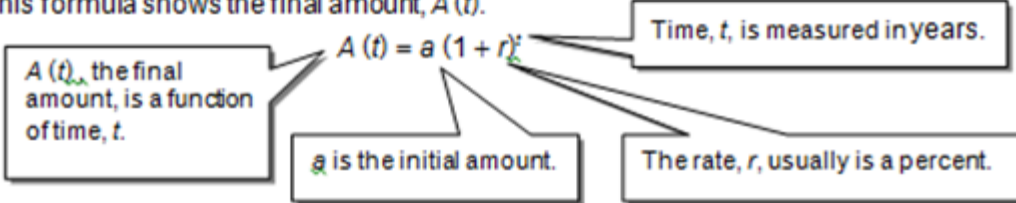
$a =$ _____ $b =$ _____



Worksheet Q4-6 sheet Monday continued.

Exponential Functions, Growth, and Decay (continued)

When an initial amount, a , increases or decreases by a constant rate, r , over a number of time periods, t , this formula shows the final amount, $A(t)$.



An initial amount of \$15,000 increases by 12% per year. In how many years will the amount reach \$25,000?

Step 1 Identify values for a and r .

$a = \$15,000$ $r = 12\% = 0.12$

Step 2 Substitute values for a and r into the formula.

$f(t) = a(1+r)^t$

$f(t) = 15,000(1+0.12)^t$

$f(t) = 15,000(1.12)^t$ Simplify.

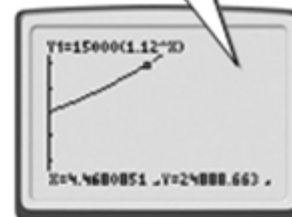
Step 3 Graph the function using a graphing calculator. Modify the scales: [0, 10] and [0, 30,000].

Step 4 Use the graph and the [TRACE] feature on the calculator to find $f(t) = 25,000$.

Step 5 Use the graph to approximate the value of t when $f(t) = 25,000$.

$t \approx 4.5$ when $f(t) = 25,000$

Remember:
On the graph, x corresponds to t and y corresponds to $f(t)$.

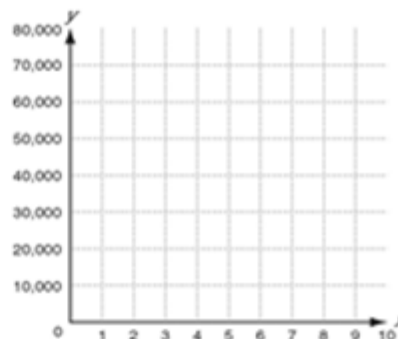


The amount will reach \$25,000 in about 4.5 years.

Write an exponential function and graph the function to solve.

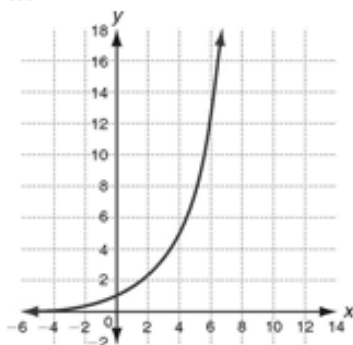
3. An initial amount of \$40,000 increases by 8% per year. In how many years will the amount reach \$60,000?

- a. $a =$ _____
- b. $r =$ _____
- c. $f(t) =$ _____
- d. Approximate t when $f(t) = 60,000$
 $t \approx$ _____



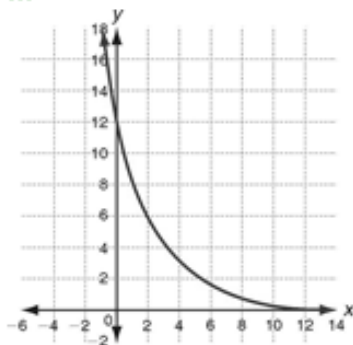
1. 0.8; 1.6

$h(x)$ shows exponential growth.



2. 12; 0.7

$g(x)$ shows exponential decay.

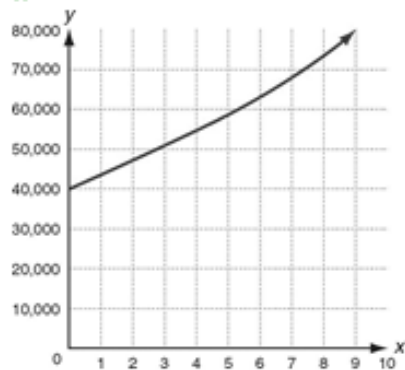


3. a. 40,000

b. 0.08

c. $f(t) = 40,000(1.08)^t$

d. 5.25 yr



Logarithmic Functions

A **logarithm** is another way to work with exponents in equations.

If $b^x = a$, then $\log_b a = x$.

If b to the x power equals a , then x is the logarithm of a in base b .

Use the definition of the logarithm to write exponential equations in logarithmic form and to write logarithmic equations in exponential form.

Exponential Form

$3^4 = 81$

base, $b = 3$
exponent, $x = 4$
value, $a = 81$

Logarithmic Form

$\log_3 81 = 4$

Logarithmic Form

$\log_5 125 = 3$

base, $b = 5$
exponent, $x = 3$
value, $a = 125$

Exponential Form

$5^3 = 125$

If no base is written for a logarithm, the base is assumed to be 10.

Example: $\log 100 = 2$ because $10^2 = 100$.

Assume the base is 10.

Write each exponential equation in logarithmic form.

1. $7^2 = 49$

$b = 7, x = 2, a = 49$

2. $6^3 = 216$

$b = \underline{\quad}, x = \underline{\quad}, a = \underline{\quad}$

3. $2^5 = 32$

Write each logarithmic equation in exponential form.

4. $\log_9 729 = 3$

$b = 9, x = 3, a = 729$

5. $\log_2 64 = 6$

$b = \underline{\quad}, x = \underline{\quad}, a = \underline{\quad}$

6. $\log 1000 = 3$

Worksheet Q4-6 sheet Tuesday continued.

Logarithmic Functions (continued)

The logarithmic function is the inverse of the exponential function. Use this fact to graph the logarithmic function.

Graph a function and its inverse.

Graph $f(x) = 0.5^x$ using a table of values.

x	-2	-1	0	1	2
$f(x)$	4	2	1	0.5	0.25

Write the inverse function.

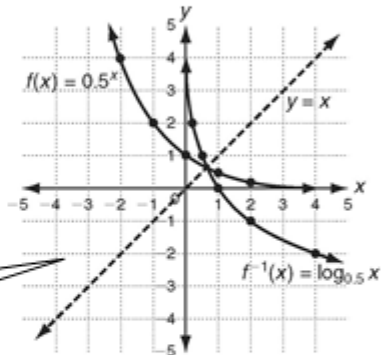
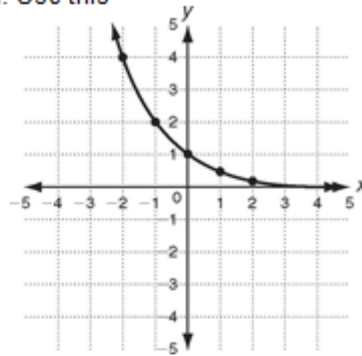
$$f^{-1}(x) = \log_{0.5} x$$

The base is 0.5.

x and $f(x)$ switch places in the function and its inverse.

x	4	2	1	0.5	0.25
$f^{-1}(x)$	-2	-1	0	1	2

Remember, the graph of the inverse is the reflection of the original function across the line $y = x$.



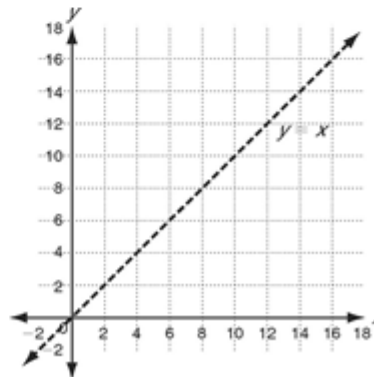
Complete the tables. Graph the functions.

7. $f(x) = 4^x$

x	-2	-1	0	1	2
$f(x)$	$\frac{1}{16}$	$\frac{1}{4}$			

$$f^{-1}(x) = \log_4 x$$

x	$\frac{1}{16}$	$\frac{1}{4}$			
$f^{-1}(x)$					



1. $\log_7 49 = 2$

2. $b = 6, x = 3, a = 216$

$\log_6 216 = 3$

3. $b = 2, x = 5, a = 32$

$\log_2 32 = 5$

4. $9^3 = 729$

5. $b = 2, x = 6, a = 64$

$2^6 = 64$

6. $b = 10, x = 3, a = 1000$

$10^3 = 1000$

7.

x	-2	-1	0	1	2
$f(x)$	$\frac{1}{16}$	$\frac{1}{4}$	1	4	16

x	$\frac{1}{16}$	$\frac{1}{4}$	1	4	16
$f^{-1}(x)$	-2	-1	0	1	2

