

Unit 3: Day 7 Notes

Name: _____

Objective: I can represent mathematical relationships using graphs.

Review: Exponential:

grows rapidly
increases or decreases

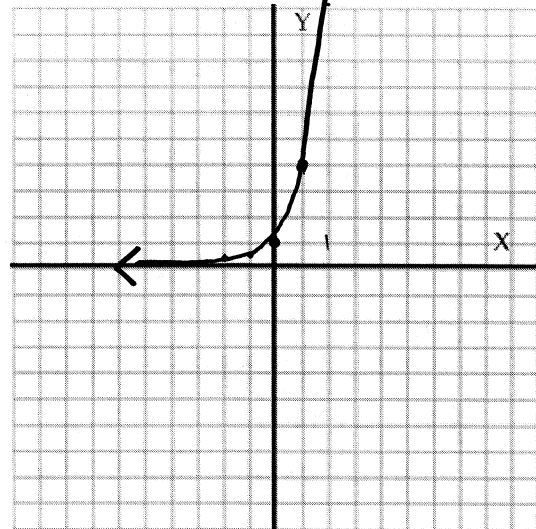
$$y = a \cdot b^x$$

$$y = 4^x$$

Ex 1) Evaluate each function at the given values. Graph the values and determine if the graph is linear, quadratic, or exponential.

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

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



x-int: none y-int: (0, 1)

Min. or Max: none, but approaches

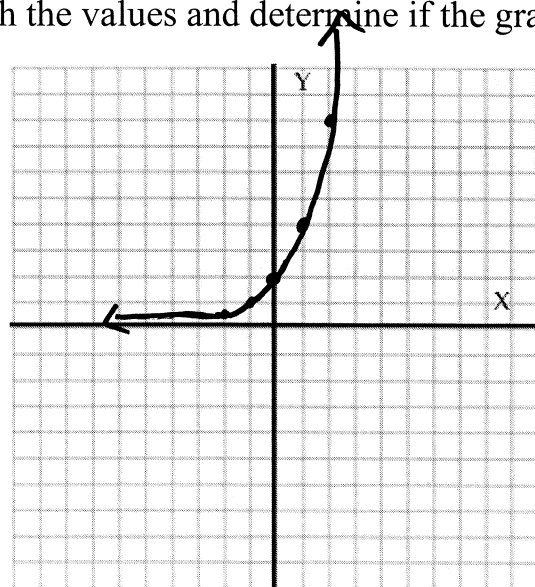
Is the graph increasing or decreasing? increasing

a min of 0.

Ex 2) Evaluate each function at the given values. Graph the values and determine if the graph is linear, quadratic, or exponential.

$$f(x) = 2^{x+1}$$

x	$f(x) = 2^{x+1}$	f(x)
-2	$f(-2) = 2^{-2+1} = 2^{-1} = \frac{1}{2}$	$(-2, \frac{1}{2})$
-1	$f(-1) = 2^{-1+1} = 2^0 = 1$	$(-1, 1)$
0	$f(0) = 2^{0+1} = 2^1 = 2$	$(0, 2)$
1	$f(1) = 2^{1+1} = 2^2 = 4$	$(1, 4)$
2	$f(2) = 2^{2+1} = 2^3 = 8$	$(2, 8)$



x-int: none y-int: (0, 2)

Min. or Max: none, but approaches

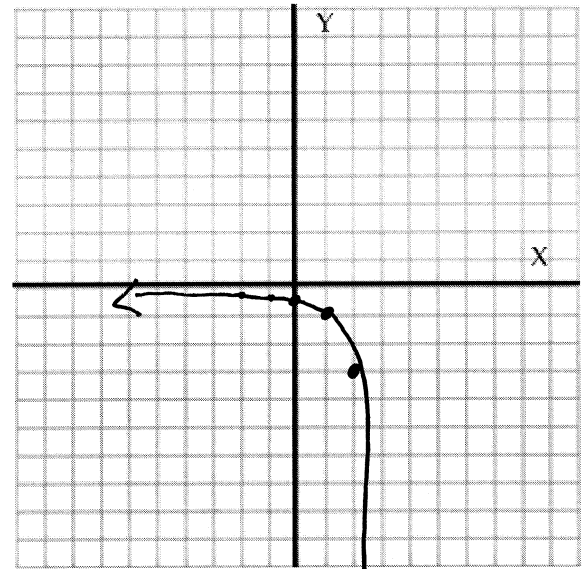
Is the graph increasing or decreasing? increasing

0 as a min.

Ex 3) Evaluate each function at the given values. Graph the values and determine if the graph is linear, quadratic, or exponential.

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

x	$f(x) = -(3^{x-1})$	f(x)
-2	$f(-2) = -(3^{-2-1}) = -(3^{-3}) = -\frac{1}{27}$	$(-2, -\frac{1}{27})$
-1	$f(-1) = -(3^{-1-1}) = -(3^{-2}) = -\frac{1}{9}$	$(-1, -\frac{1}{9})$
0	$f(0) = -(3^{0-1}) = -(3^{-1}) = -\frac{1}{3}$	$(0, -\frac{1}{3})$
1	$f(1) = -(3^{1-1}) = -(3^0) = -1$	$(1, -1)$
2	$f(2) = -(3^{2-1}) = -(3^1) = -3$	$(2, -3)$



x-int: none y-int: $(0, -\frac{1}{3})$

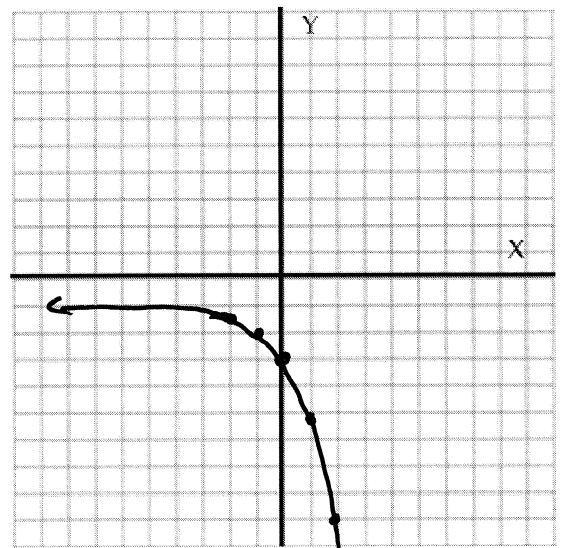
Min. or Max: none, but approaches

Is the graph increasing or decreasing? decreasing 0 as a max

Ex 4) Evaluate each function at the given values. Graph the values and determine if the graph is linear, quadratic, or exponential.

$$f(x) = -2(2^x) - 1$$

x	$f(x) = -2(2^x) - 1$	f(x)
-2	$f(-2) = -2(2^{-2}) - 1 = -2(\frac{1}{4}) - 1 = -1.5$	$(-2, -1.5)$
-1	$f(-1) = -2(2^{-1}) - 1 = -2 \cdot \frac{1}{2} - 1 = -2$	$(-1, -2)$
0	$f(0) = -2(2^0) - 1 = -2(1) - 1 = -3$	$(0, -3)$
1	$f(1) = -2(2^1) - 1 = -4 - 1 = -5$	$(1, -5)$
2	$f(2) = -2(2^2) - 1 = -8 - 1 = -9$	$(2, -9)$



x-int: none y-int: $(0, -3)$

Min. or Max: none but approaches

Is the graph increasing or decreasing? decreasing -1 as a max