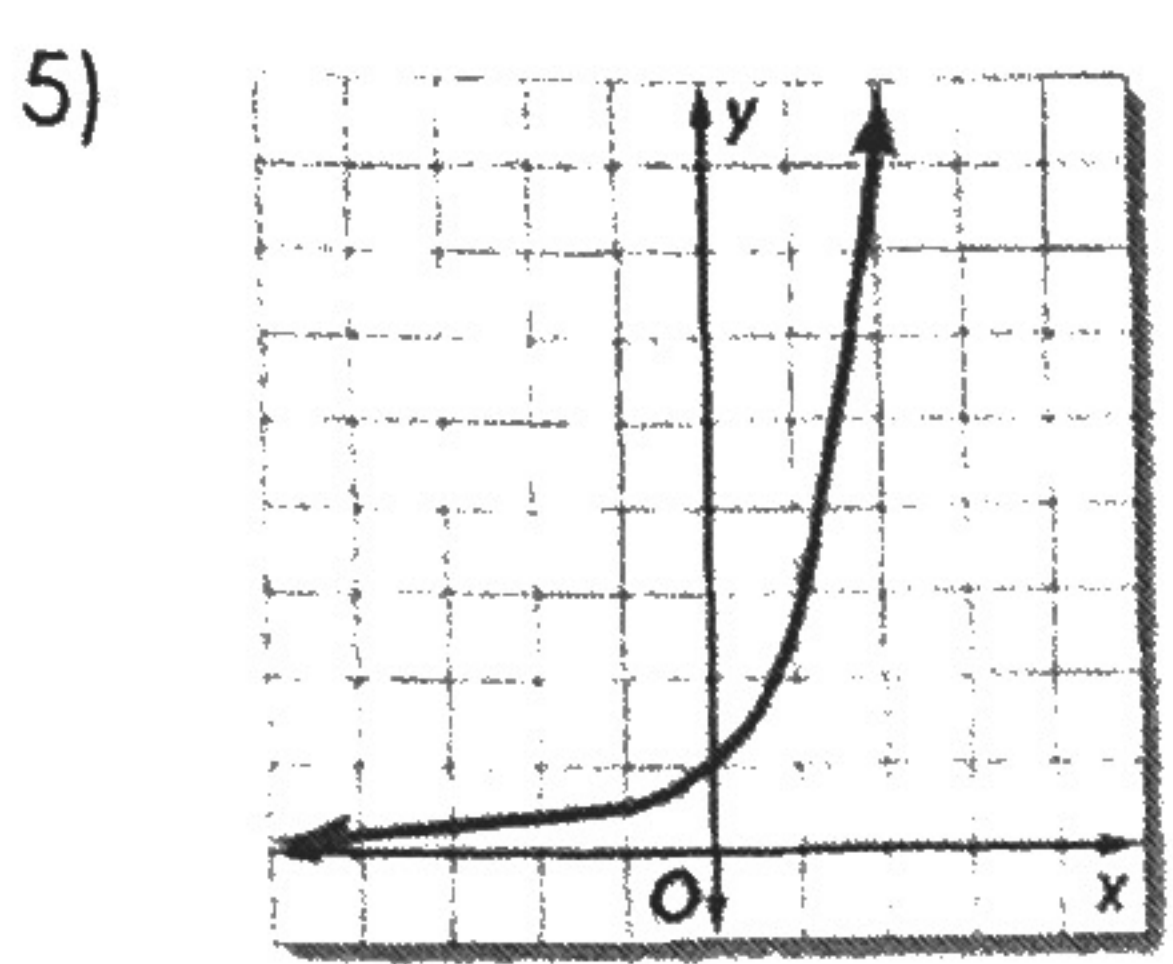


Name: Key
 GSE Algebra 1

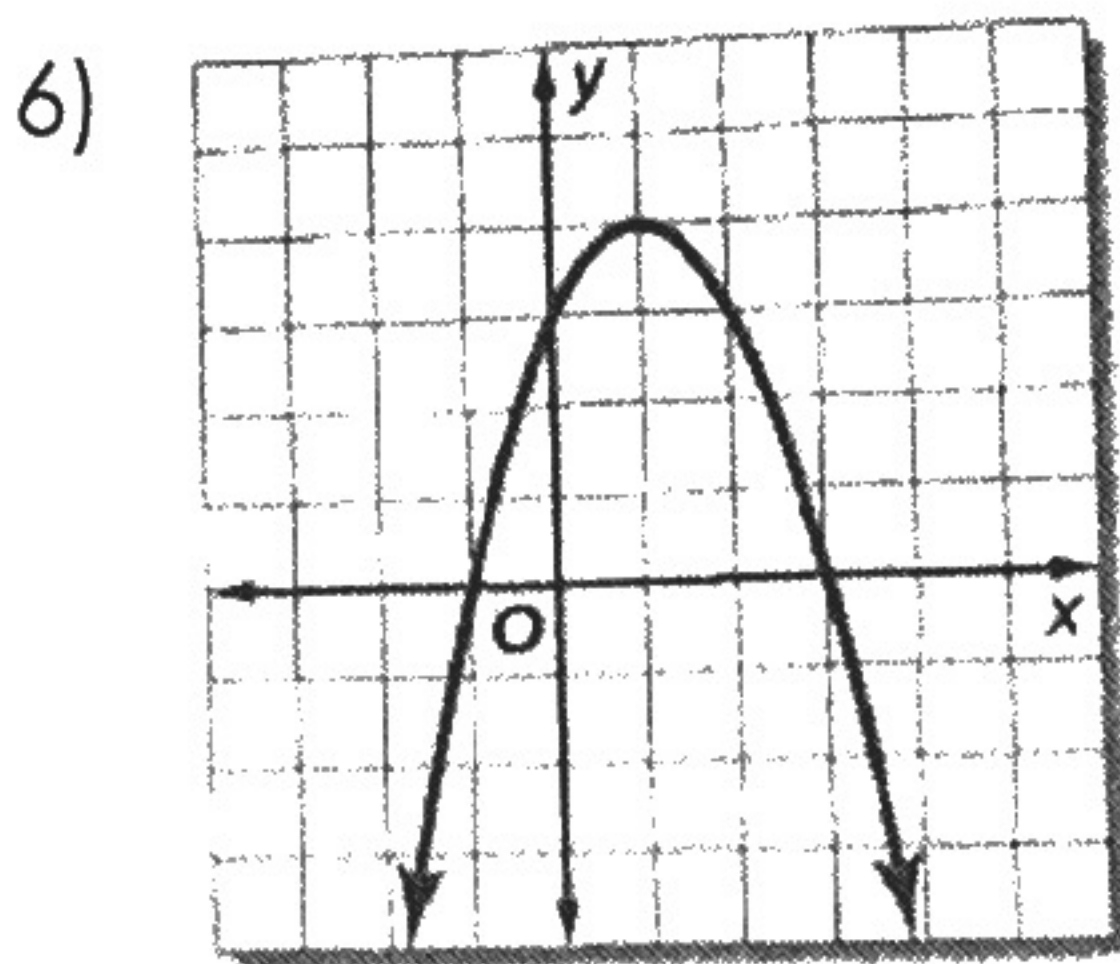
Date: _____ Period: _____
 Day 14 - Exponential Growth Homework

Identify whether each function as linear, exponential, or neither.

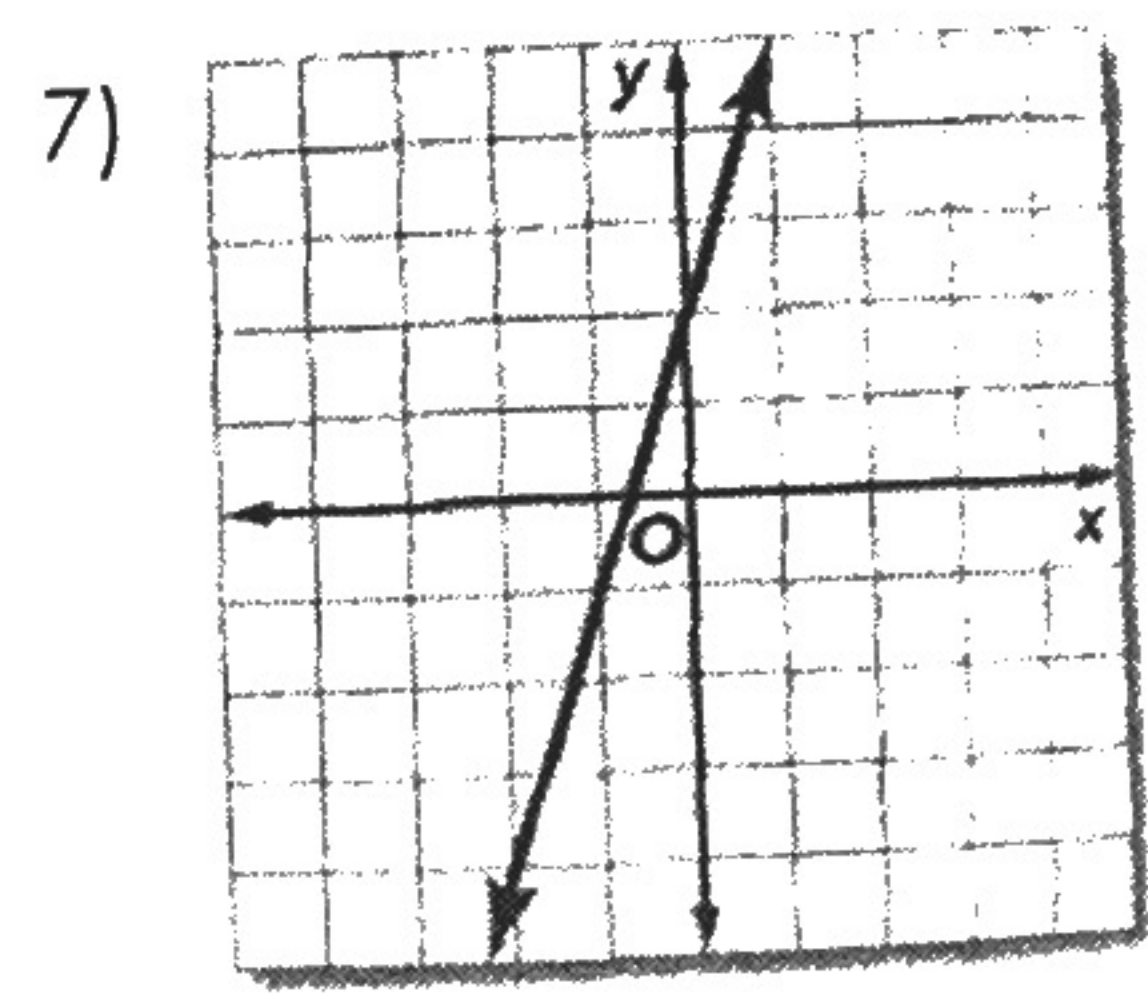
- 1) $y + 2x = 7$ linear
 2) $y = x^3 - 4$ neither
 3) $y = 2^x + 5$ exponential
 4) $y = 2x(x - 1)$
 $y = 2x^2 - 2x$
 a neither



exponential



neither



linear

Identify the following characteristics for each exponential growth function

- 8) $y = 6^x$
 Base: 6
 Initial Value: 1
 H.A.: $y = 0$
 y-int: $(0, 1)$
 End Beh: $as x \rightarrow \infty, y \rightarrow \infty$
 $as x \rightarrow -\infty, y \rightarrow 0$

- 9) $f(x) = 3^x + 6$
 Base: 3
 Initial Value: 1
 H.A.: $y = 6$
 y-int: $(0, 7)$ $3^0 + 6 = 7$
 End Beh: $as x \rightarrow \infty, y \rightarrow \infty$
 $as x \rightarrow -\infty, y \rightarrow 6$

- 10) $y = -3 + 2^x$
 Base: 2
 Initial Value: 1
 H.A.: $y = -3$
 y-int: $(0, -2)$ $-3 + 2^0 = -2$
 End Beh: $x \rightarrow \infty, y \rightarrow \infty$
 $x \rightarrow -\infty, y \rightarrow -3$

- 11) $f(x) = 3(2)^x$
 Base: 2
 Initial Value: 3
 H.A.: $y = 0$
 y-int: $(0, 3)$ $3(2)^0 = 3$
 End Beh: $x \rightarrow \infty, y \rightarrow \infty$
 $x \rightarrow -\infty, y \rightarrow 0$

- 12) $y = \frac{1}{4}(3)^x$
 Base: 3
 Initial Value: $-\frac{1}{4}$
 H.A.: $y = 0$
 y-int: $(0, -\frac{1}{4})$ $-\frac{1}{4}(3)^0$
 End Beh: $x \rightarrow \infty, y \rightarrow \infty$
 $x \rightarrow -\infty, y \rightarrow 0$

- 13) $y = -5(4^x) + 2$
 Base: 4
 Initial Value: -5
 H.A.: $y = 2$
 y-int: $(0, -3)$ $-5(4^0) + 2$
 End Beh: $x \rightarrow \infty, y \rightarrow -\infty$
 $x \rightarrow -\infty, y \rightarrow 2$

Graph the following exponential functions by making an x-y table.

14) Graph the exponential function $y = 2^x - 1$

x	y
-3	-0.875
-2	-0.75
-1	-0.5
0	0
1	1
2	3
3	7

Growth or Decay? growth
 How do you know? base > 1
 Initial Value: 1 Base: 2

HA: $y = -1$

Max: none Min: none

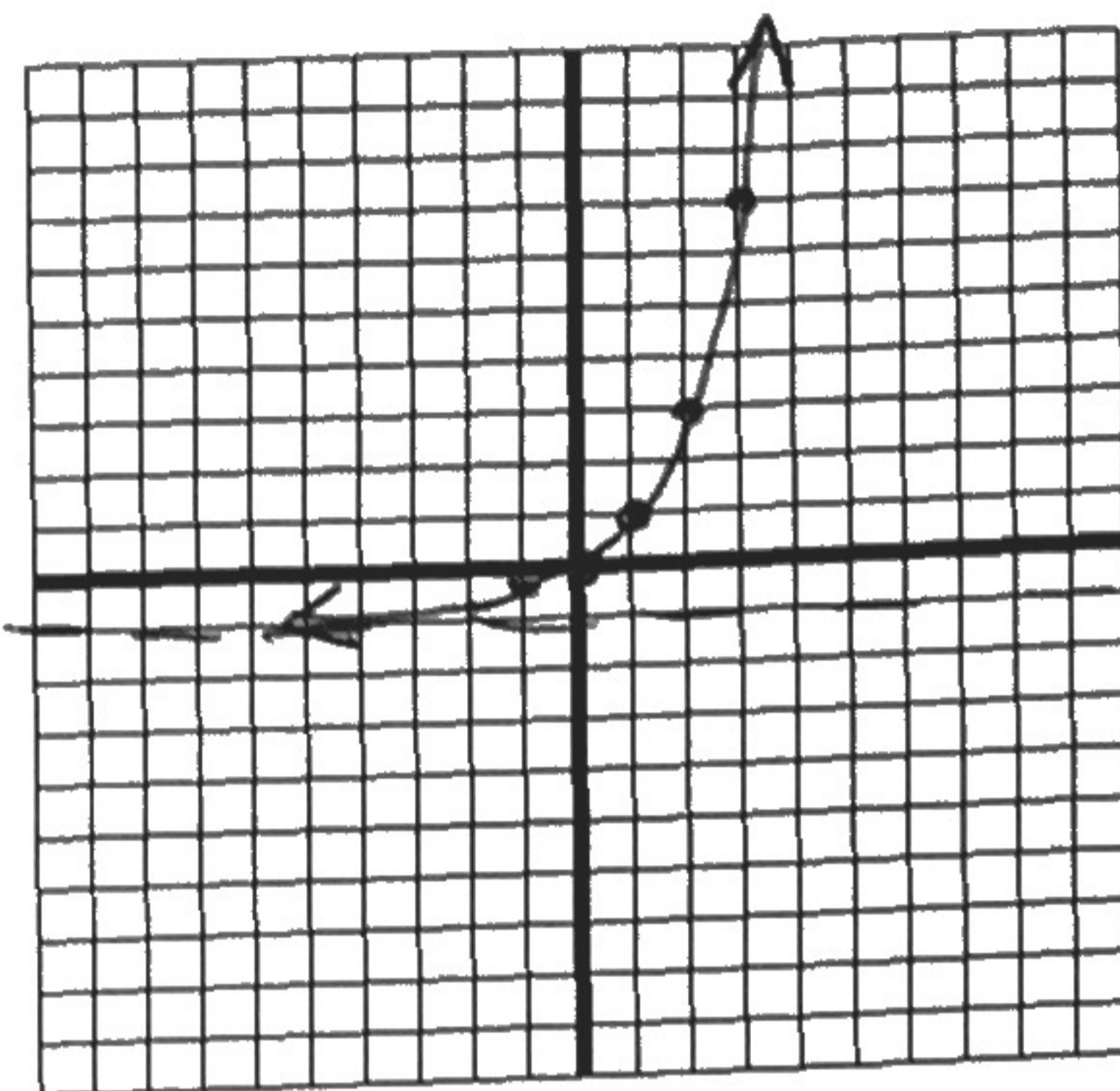
Y-Intercept: (0, 0)

Increasing: \mathbb{R} Decreasing: none

Domain: \mathbb{R} Range: growth $(-1, \infty)$, $y > -1$

End Behavior: As x increases, y approaches ∞

As x decreases, y approaches -1



15) Graph the exponential function $y = \frac{1}{2}(2^x) + 2$

x	y
-3	2.0625
-2	2.125
-1	2.25
0	2.5
1	3
2	4
3	6

Growth or Decay? growth

How do you know? base > 1

Initial Value: $\frac{1}{2}$ Base: 2

HA: $y = 2$

Max: none Min: none

Y-Intercept: (0, 2.5)

Increasing: \mathbb{R} Decreasing: none

Domain: \mathbb{R} Range: $(2, \infty)$, $y > 2$

End Behavior: As x increases, y approaches ∞

As x decreases, y approaches 2

