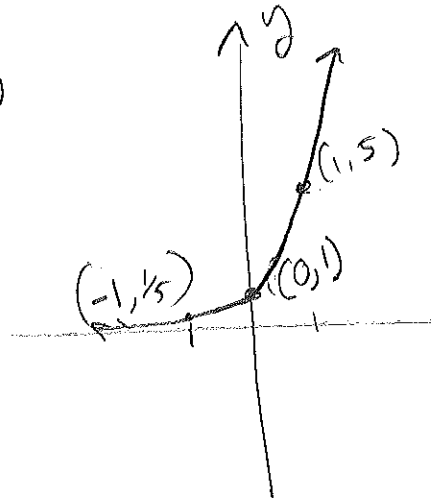
Assign 4.3: 85, 89, 90, 103, 104

M 11/14/16

4.3 (continued)

I. Finding Eqn of an Exp. graph

(86)



Given a graph, find the eqn.

$y = Ca^x$

(1) use (0,1) $\Rightarrow$ $1 = Ca^0$

$1 = C(1)$

$C = 1$

* find "C" and "a"

$\therefore$ $y = a^x$ b/c $C = 1$

(2) use (1,5)

$5 = a^1$

$a = 5$

$\therefore$ $y = 5^x$ is the eqn of graph

(87) $y = ca^x$

1) use $(0,-1) \Rightarrow -1 = ca^0$

$c = -1 \Rightarrow y = (-1)a^x$

2) use $(1,-6) \Rightarrow -6 = (-1)a^1$

$\frac{-6}{-1} = \frac{-a}{-1}$

$a = 6$

$$y = -6^x$$

(102) a) $p(h) = 760e^{-0.145h}$

$p(2) = 760e^{-0.145(2)}$

$= 568.68$ mm of Hg

b) $p(10) = 760\,e^{(-.145 \cdot 10)}$

$= 178.27$ mm of Hg

Remember: $y = ca^x$

$a = 1 + r \rightarrow$ appreciation/growth

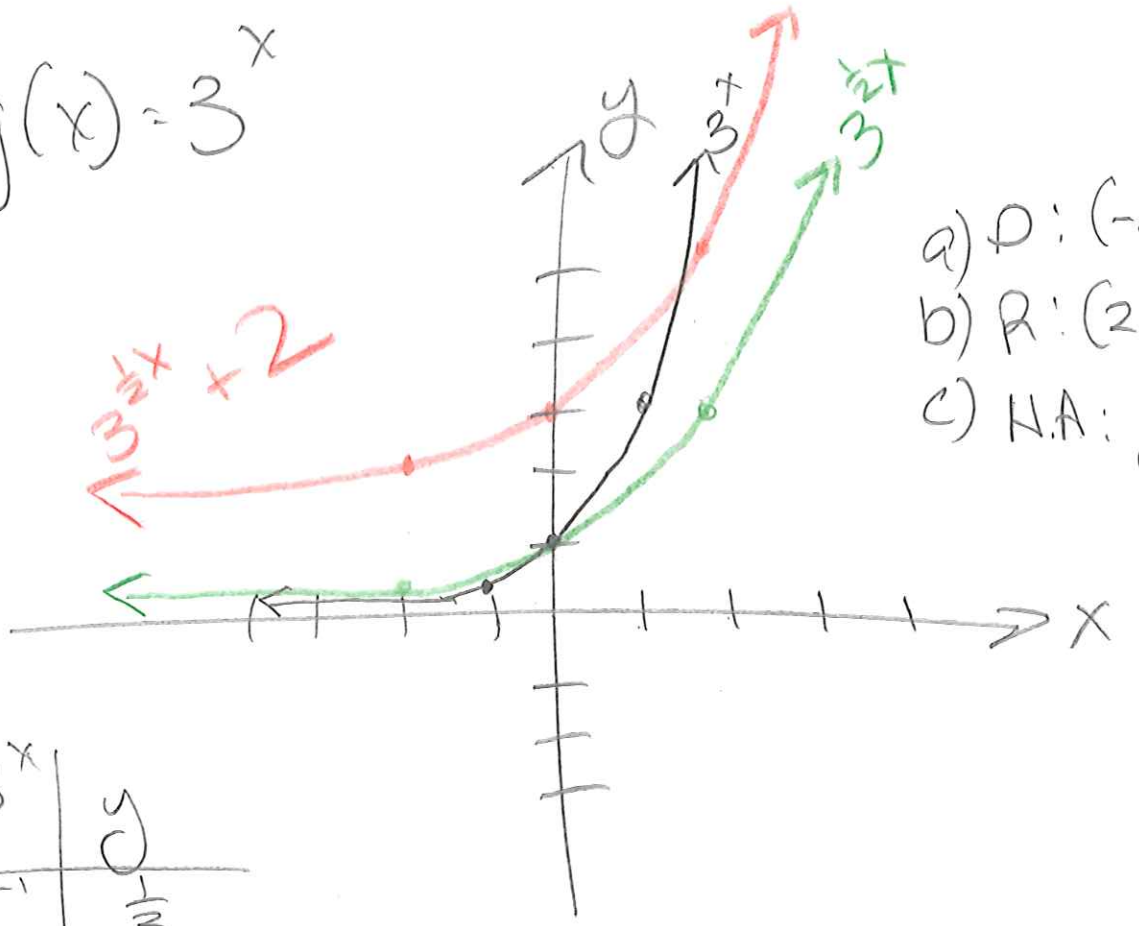
$a = 1 - r \rightarrow$ decay/depreciation

4.3

(51) $f(x) = 2 + 3^{\frac{x}{2}}$

$= 3^{\frac{1}{2}x} + 2$ → h. dilation/stretch, → v. shift ↑

$g(x) = 3^x$

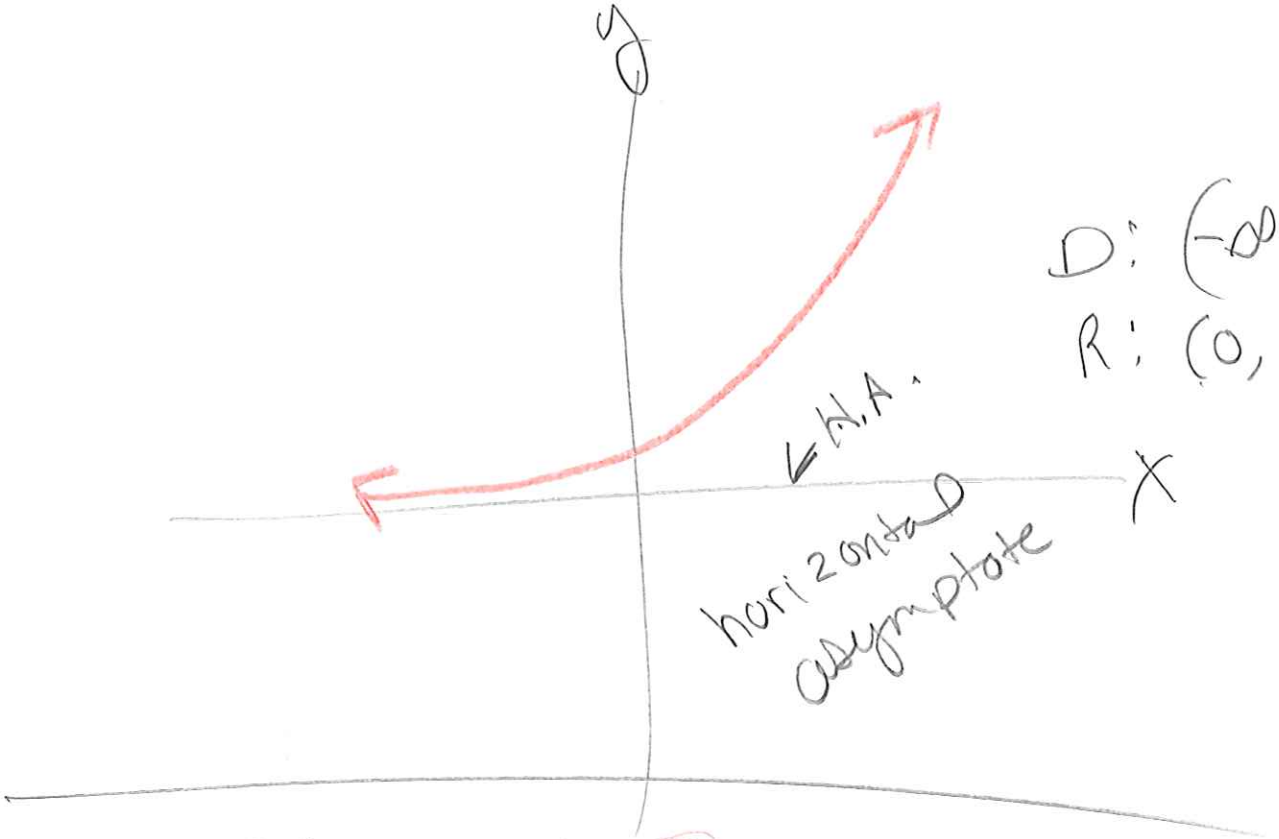


a) D: $(-\infty, \infty)$

b) R: $(2, \infty)$

c) H.A: $y = 2$

x	3^x	y
-1	3^{-1}	$\frac{1}{3}$
0	3^0	1
1	3^1	3



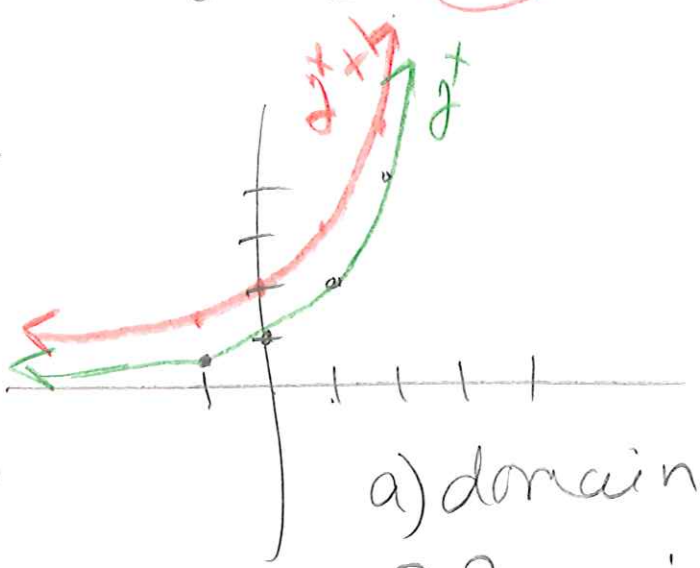
D: $(-\infty, \infty)$

R: $(0, \infty)$

(41) $f(x) = 2^x$ +1

(2^x)

x	y
-1	1/2
0	1
1	2
2	4



a) domain $(-\infty, \infty)$

b) Range : $(1, \infty)$

c) H.A. : $y = 1$

$g(x) = 2^{-1}$

$= \frac{1}{2}$

$2^0 = 1$

$2^1 = 2$

$2^2 = 4$

$\left(\frac{1}{2}\right)^{-1} = 2$

$(4)^{-1} = \frac{1}{4}$

$x^{-1} = \frac{1}{x}$

(71) $8^{-x+14} = 16^{x}$

$8 : 2^3$

$16 : 2^4$

$(2^3)^{-x+14} = (2^4)^{x}$

$3(-x+14)$

$-3x+42$

$2^{-3x+42} = 2^{4x}$

$2^x = 2^4$

$-3x + 42 = 4x$

$+3x \quad +3x$

$42 = 7x$

$\frac{42}{7} = \frac{7x}{7}$

$x = 6$

$x = 4$

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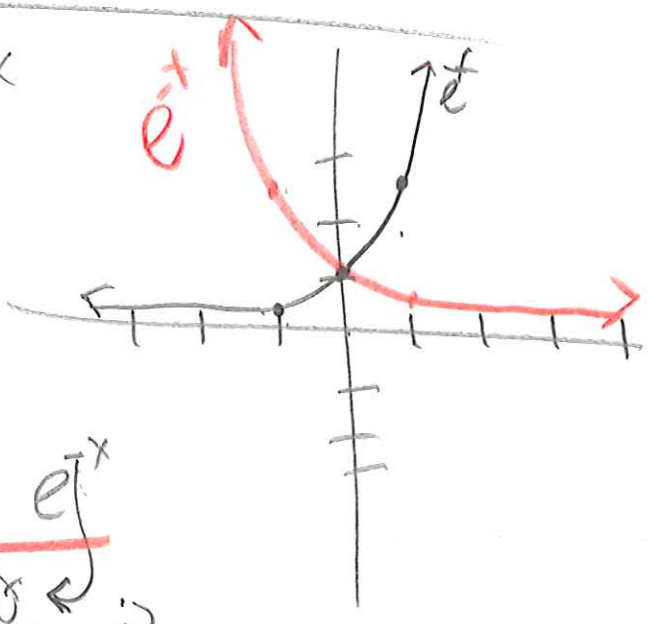
(53) $f(x) = e^x$

x	e^x	y
-1	e^{-1}	$\frac{1}{e} \approx \frac{1}{2.71} \approx .367$
0	e^0	1
1	e^1	≈ 2.71



graph e^{-x}

reflect over y-axis