Chapter 7: Exponential Functions

Section 7.1 Graphs of Exponential Functions

See section 7.1 solutions for the answers to section 7.1. They took up too much room to include here.

Section 7.2: Exponential Equations

1) x = 4

3) x = 5

5) x = 3

7) x = -2

9) x = 2

11) $x = \frac{1}{2}$

13) $x = \frac{1}{6}$

15) $x = \frac{7}{2}$

17) x = -4

19) x = -4

21) x = -4

23) x = -4

25) x = 3

27) x = -5/4

29) x = -2

31) x = 16/7

33) x = 11/7

35) x = 2

37) x = 18

39) x = 1/2

41) x = 0

Section 7.3: Applications of Exponential Functions

1) $13,778.10

3) 9 computers

5) remaining charge .00005 coulombs

7) 349 people

9) 11.62 million people will visit Tumblr.

11) about 55 thousand people

13) About 10 million people

15) $1,218.99

17) $15,172.22

19) $121,665.29

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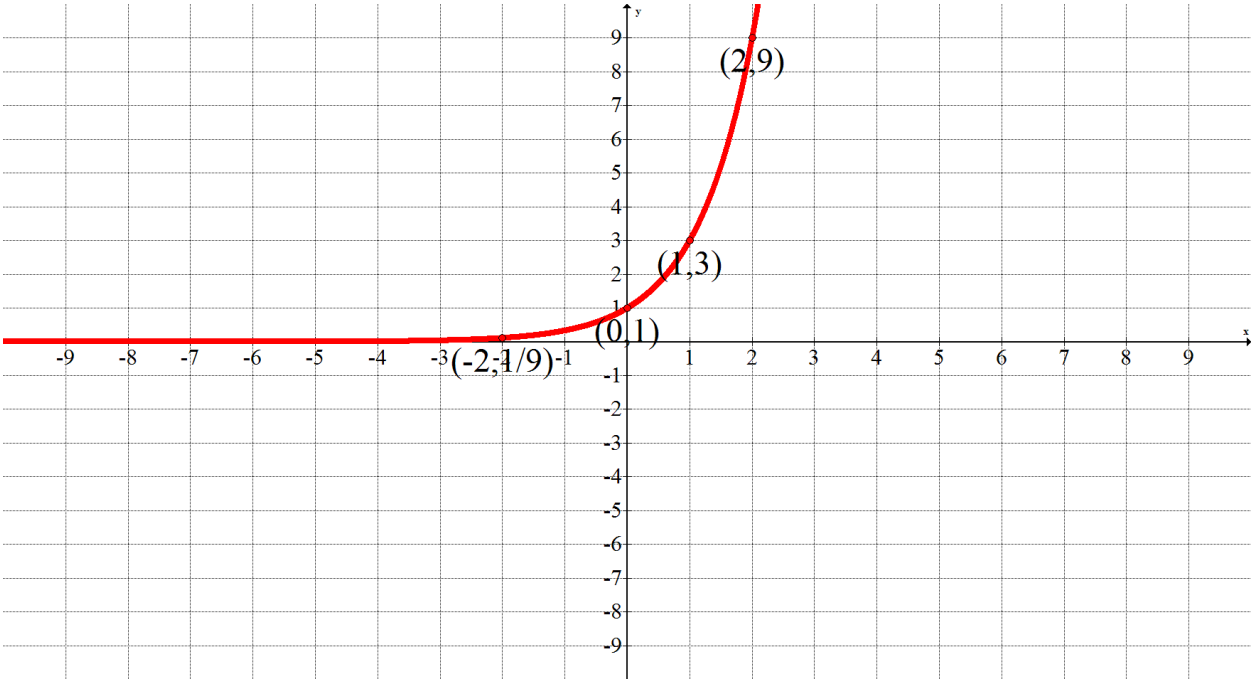
Chapter 7 Practice Test

1) $f(x) = 3^x$

x	Computation of y	Y value	point
-2	$3^{-2} = \frac{1}{3^2}$	Either .1 or 1/9	(-2, 1/9)
-1	$3^{-1} = \frac{1}{3^1}$	Either .3 or 1/3	(-1, 1/3)
0	3^0	1	(0,1)
1	3^1	3	(1,3)
2	3^2	9	(2,9)

Domain of all exponential functions is $(-\infty, \infty)$

Range: the graph is just slightly above the x-axis. The y-value of the x-axis is 0. So the range is $(0, \infty)$



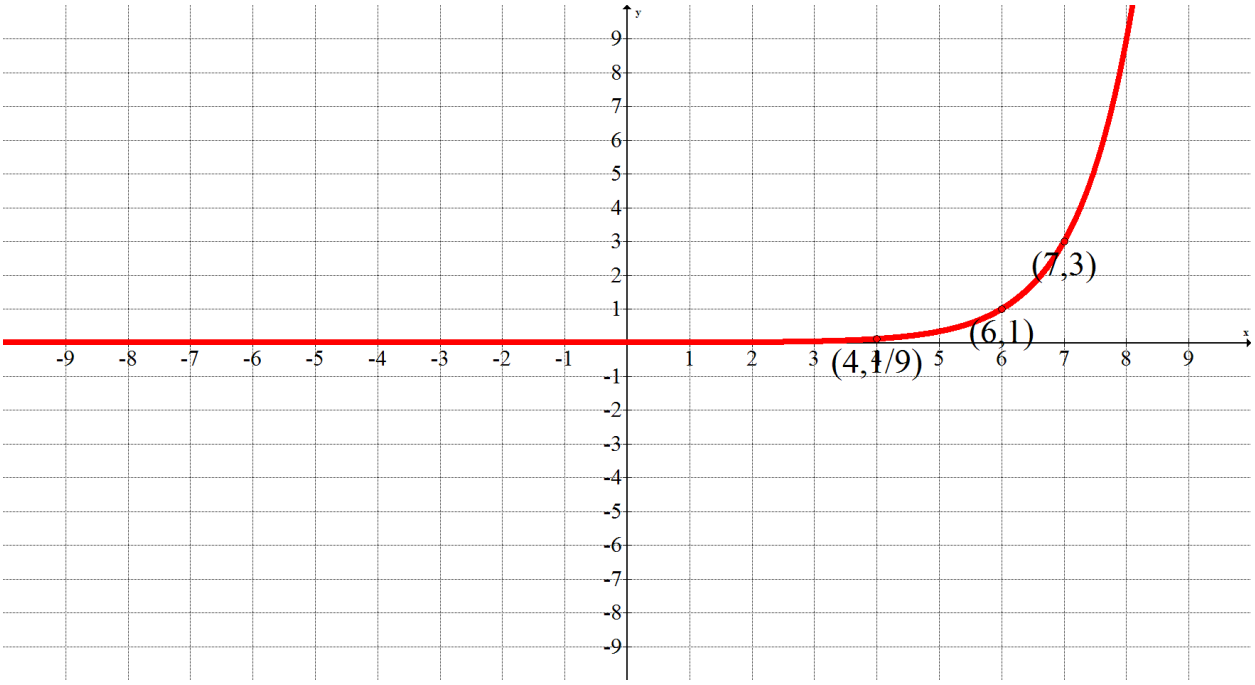
Chapter 7: Exponential Functions

2) $m(x) = 3^{x-6}$

x	Computation of y	Y value	point
4	$3^{4-6} = \frac{1}{3^2}$	Either .1 or 1/9	(4, 1/9)
5	$3^{5-6} = \frac{1}{3^1}$	Either .3 or 1/3	(5, 1/3)
6	3^{6-6}	1	(6,1)
7	3^{7-6}	3	(7,3)
8	3^{8-6}	9	(8,9)

Domain of all exponential functions is $(-\infty, \infty)$

Range: the graph is just slightly above the x-axis. The y-value of the x-axis is 0. So the range is $(0, \infty)$



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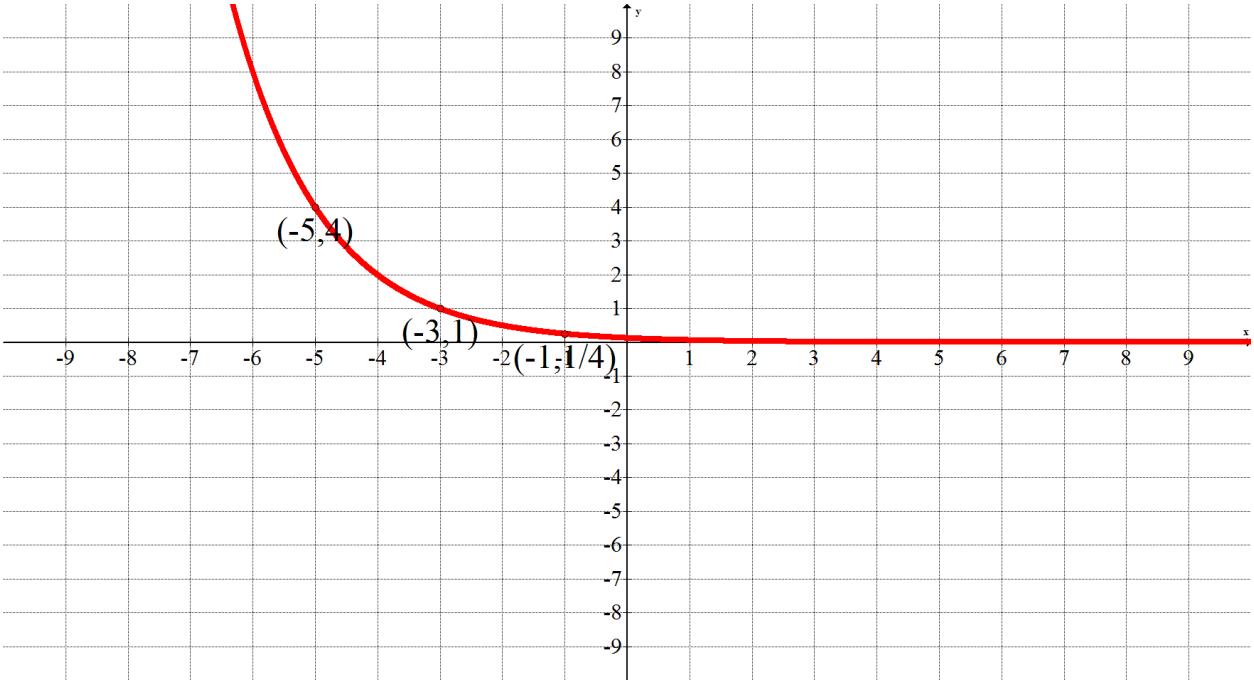
3) $g(x) = \left(\frac{1}{2}\right)^{x+3}$

x	Computation of y	Y value	point
-5	$\left(\frac{1}{2}\right)^{-5+3} = \left(\frac{2}{1}\right)^{2}$	4	(-5, 4)
-4	$\left(\frac{1}{2}\right)^{-4+3} = \left(\frac{2}{1}\right)^{1}$	2	(-4, 2)
-3	$\left(\frac{1}{2}\right)^{-3+3} = \left(\frac{1}{2}\right)^{0}$	1	(-3,1)
-2	$\left(\frac{1}{2}\right)^{-2+3} = \left(\frac{1}{2}\right)^{1}$	Either 1/2 or .5	(-2, 1/2)
-1	$\left(\frac{1}{2}\right)^{-1+3}\left(\frac{1}{2}\right)^{2}$	Either 1/4 or .25	(-1, 1/4)

Domain of all exponential functions is $(-\infty, \infty)$

Range: the graph is just slightly above the x-axis. The y-value of the x-axis is 0. So the range is $(0, \infty)$



4) x = 2

5) x = -1

6) $x = \frac{9}{2}$

7) x = -6

8) $x = -\frac{1}{3}$

9) x = 12

10) $x = \frac{3}{2}$

11) 9.70 million people

12) 113.10 million people

13) $5,982.07