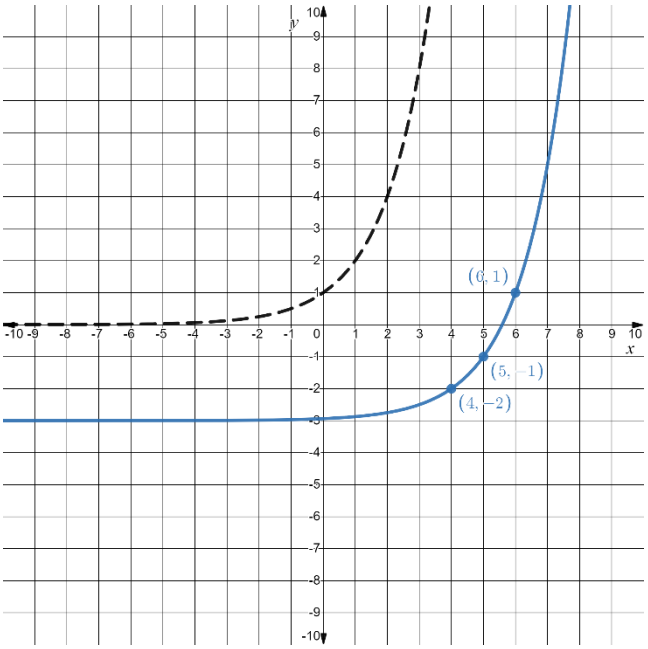
Name: _____ Date: _____

Learning Goal 7.1	Applying one or more transformations to an exponential function, including translations, stretches and reflections.

More Questions – Solutions

1. Sketch each base function, then each of the following transformations, without using technology. Identify the transformed values of the given coordinates.

a. $y = 2^x$ $y = 2^{(x-4)} - 3$

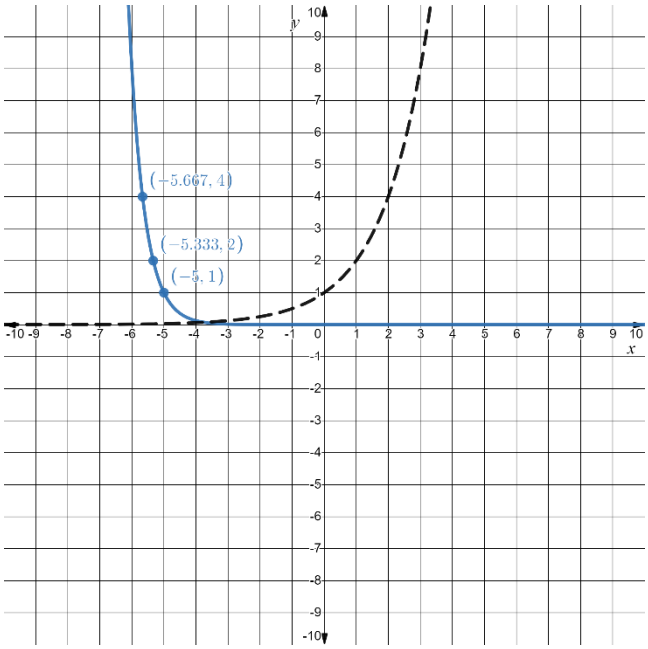


$(0, 1)$ $(1, 2)$ $(2, 4)$

$(0 + 4, 1 - 3)$ $(1 + 4, 2 - 3)$ $(2 + 4, 4 - 3)$

$(4, -2)$ $(5, -1)$ $(6, 1)$

b. $y = 2^x$ $y = (2)^{-3(x+5)}$

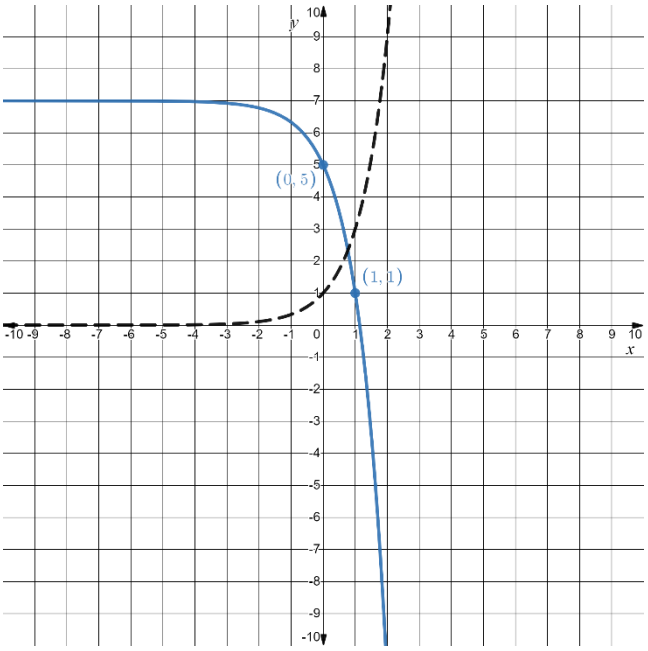


$(0, 1)$ $(1, 2)$ $(2, 4)$

$\left(\left(0 * -\frac{1}{3}\right) - 5, 1\right)$ $\left(\left(1 * -\frac{1}{3}\right) - 5, 2\right)$ $\left(\left(2 * -\frac{1}{3}\right) - 5, 4\right)$

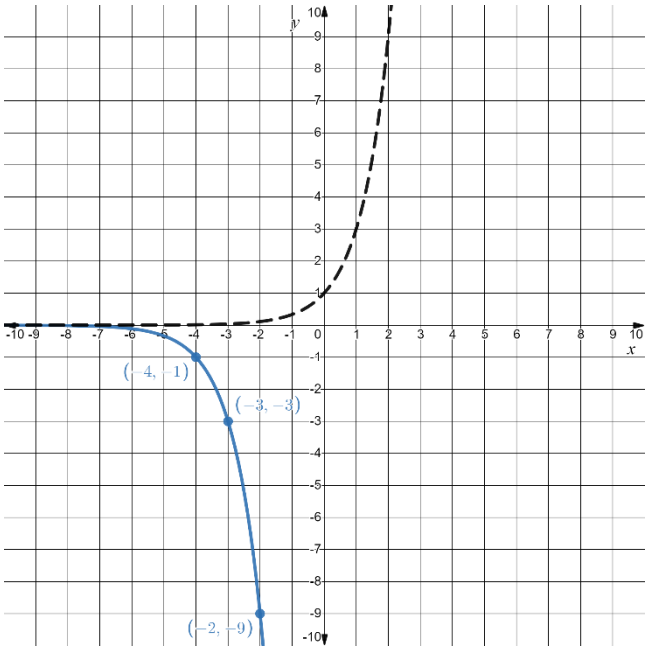
$(-5, 1)$ $\left(-\frac{16}{3}, 2\right)$ $\left(-\frac{17}{3}, 2\right)$

c. $y = 3^x$ $y = -2(3)^x + 7$



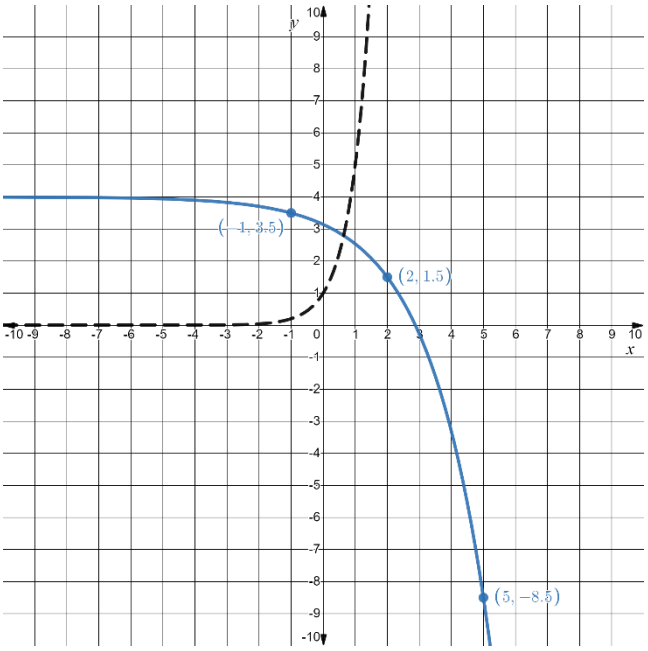
$(0,1)$	$(1,3)$	$(2,9)$
$(0,(1*-2)+7)$	$(1,(3*-2)+7)$	$(2,(9*-2)+7)$
$(0,5)$	$(1,1)$	$(2,-11)$

d. $y = 3^x$ $y = -3^{x+4}$



$(0,1)$	$(1,3)$	$(2,9)$
$(0-4,1*-1)$	$(1-4,3*-1)$	$(2-4,9*-1)$
$(-4,-1)$	$(-3,-3)$	$(-2,-9)$

e. $y = 5^x$ $y = -\frac{1}{2}(5)^{\frac{1}{3}(x+1)} + 4$



$(0, 1)$

$$\left((0 * 3) - 1, \left(1 * -\frac{1}{2}\right) + 4\right)$$

$$\left(-1, \frac{7}{2}\right)$$

$(1, 5)$

$$\left((1 * 3) - 1, \left(5 * -\frac{1}{2}\right) + 4\right)$$

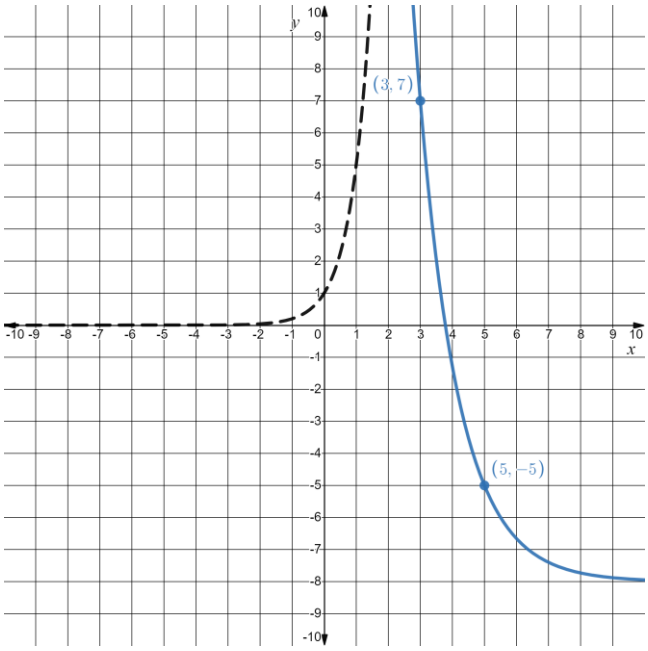
$$\left(2, \frac{3}{2}\right)$$

$(2, 25)$

$$\left((2 * 3) - 1, \left(25 * -\frac{1}{2}\right) + 4\right)$$

$$\left(5, -\frac{17}{2}\right)$$

f. $y = 5^x$ $y = 3(5)^{-\frac{1}{2}(x-5)} - 8$



$(0, 1)$

$$((0 * -2) + 5, (1 * 3) - 8)$$

$$(5, -5)$$

$(1, 5)$

$$((1 * -2) + 5, (5 * 3) - 8)$$

$$(3, 7)$$

$(2, 25)$

$$((2 * -2) + 5, (25 * 3) - 8)$$

$$(1, 67)$$