

Review of Exponential Transformations

For the following functions, name all the transformations and then give the y-intercept, asymptote, and whether it is growth or decay:

Function	Transformations	Y-intercept	Asymptote	Growth/Decay
a. $y = -\frac{1}{3}(2)^{x-1}$	a = - reflected a = $\frac{1}{3}$ Shrink h = 1 right 1	$-\frac{1}{3}(2)^{0-1}$ (0, -17)	y = 0	b = 2 Growth
b. $y = 4\left(\frac{1}{2}\right)^x - 7$	a = 4 stretch k = -7 down 7	$4\left(\frac{1}{2}\right)^0 - 7$ (0, -3)	y = -7	b = $\frac{1}{2}$ decay
c. $y = -\frac{1}{2}(3)^x + 4$	a = - reflect a = $\frac{1}{2}$ shrink k = 4 up 4	(0, 3.5)	y = 4	growth
d. $y = -\left(\frac{7}{2}\right)^x - 3$	a = - reflect k = -3 down	(0, -4)	y = -3	growth
e. $y = -(3.5)^{x+4}$	a = - reflect h = -4 left 4	(0, -150.06)	y = 0	Growth

If **a** is **negative**,
the graph...
Reflects

If **h** is **positive**, the graph... shift Right
In the equation, I would see... $(x-h)$
If **h** is **negative**, the graph... shift Left
In the equation, I would see... $(x+h)$

$$y = a(b)^x - h + k$$

If **a** is **between 0 and 1**,
the graph...

shrinks

Grows slower

If **a** is **greater than 1**,
the graph...

stretches

Grows faster

If **b** is **greater than 1**...

Growth

If **b** is **between 0 & 1**...

Decay

If **k** is **positive**, the graph...

shifts UP

If **k** is **negative**, the graph...

shifts DOWN

Asymptote: $y = k$