

7.1 – Exponential Functions

Application 7.1

1. Solve for a: $\left(\frac{1}{216}\right)^{-2a+2} = 36^{a-1}$

Handwritten work for problem 1:

$$(216)^{-2a+2} = (6^3)^{a-1}$$

$$(6^{-3})^{-2a+2} = 6^{3a-3}$$

$$6^{6a-6} = 6^{3a-3}$$

$$6a-6 = 3a-3$$

$$4a-6 = -3$$

$$4a = 3$$

$$a = \frac{3}{4}$$

2. John invests \$2300 in a savings account with 9% interest rate compounded quarterly, how much money will he have in 12 years?

Handwritten work for problem 2:

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

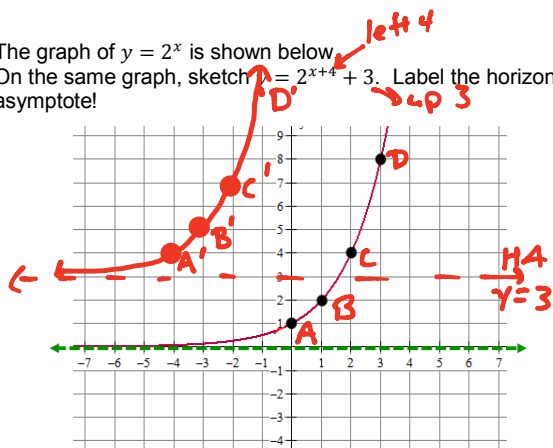
$$A = 2300\left(1 + \frac{0.09}{4}\right)^{4(12)}$$

$$A = 2300(1.0225)^{48}$$

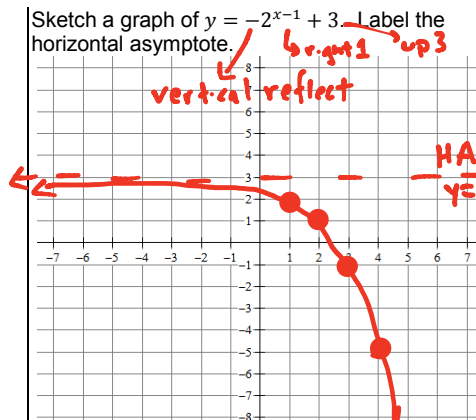
$$A \approx \$6692.17$$

Move Up/Down/Left/Right

The graph of $y = 2^x$ is shown below. On the same graph, sketch $y = 2^{x+4} + 3$. Label the horizontal asymptote!



Sketch a graph of $y = -2^{x-1} + 3$. Label the horizontal asymptote.



TRANSLATIONS

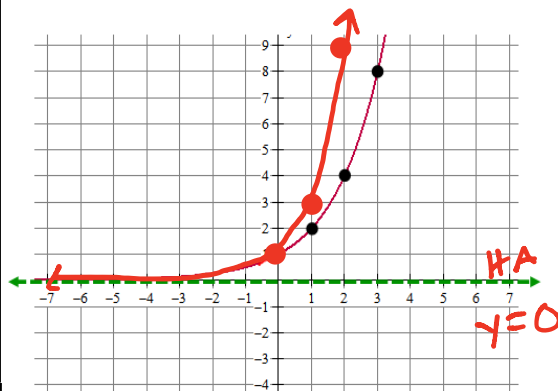
$$y = ab^{x-h} + k$$

For Review on how to translate, see Alg II 9.1

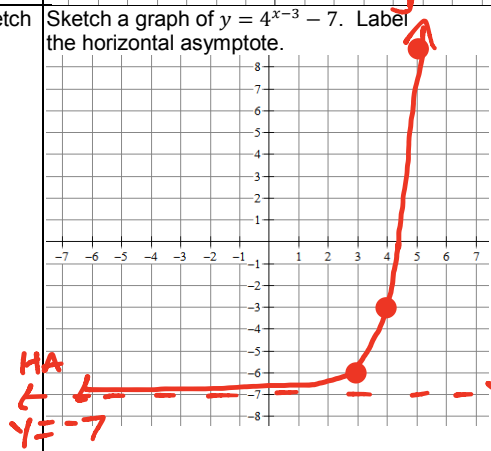


b > 1

The graph of $y = 2^x$ is shown below. On the same graph, sketch $y = 3^x$.



Sketch a graph of $y = 4^{x-3} - 7$. Label the horizontal asymptote.



This space is reserved for dumb math jokes:

Sully: Why wouldn't Goldilocks drink the ice water with 8 pieces of ice in it?
 Bean: It's too cubed.

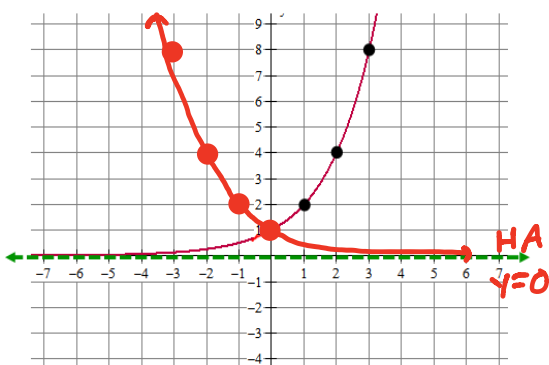
Brust: What is 7Q + 3Q?
 Sully: 10Q
 Brust: You're Welcome!

Bean: The solution to that problem looks fishy!
 Brust: It should, I used the cod-ratic formula.

(Hey...it was either dumb jokes or more problems.)

b < 1

The graph of $y = 2^x$ is shown below. On the same graph, sketch $y = \left(\frac{1}{2}\right)^x = 2^{-x}$.



Sketch a graph of $y = \left(\frac{1}{3}\right)^{x+1} - 6$. Label the horizontal asymptote.

