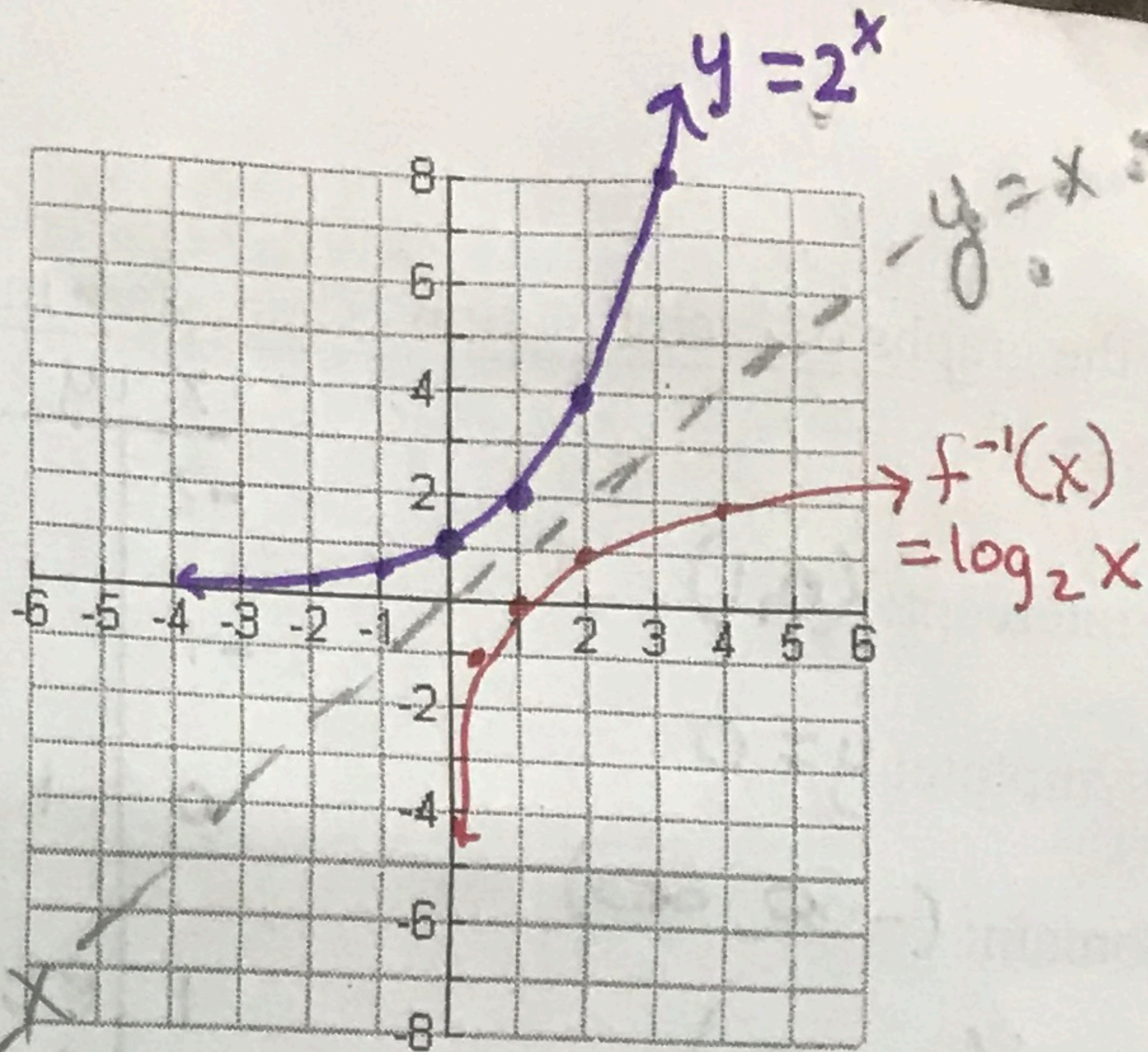


36. Graph the following:

- Sketch and label $f(x) = 2^x$.
- Sketch and label $f^{-1}(x)$ on the same set of axes.
- What is the function for $f^{-1}(x)$?



$$f^{-1}(x) = \log_2 x$$

$$y = 2^x$$

$$x = 2^y$$

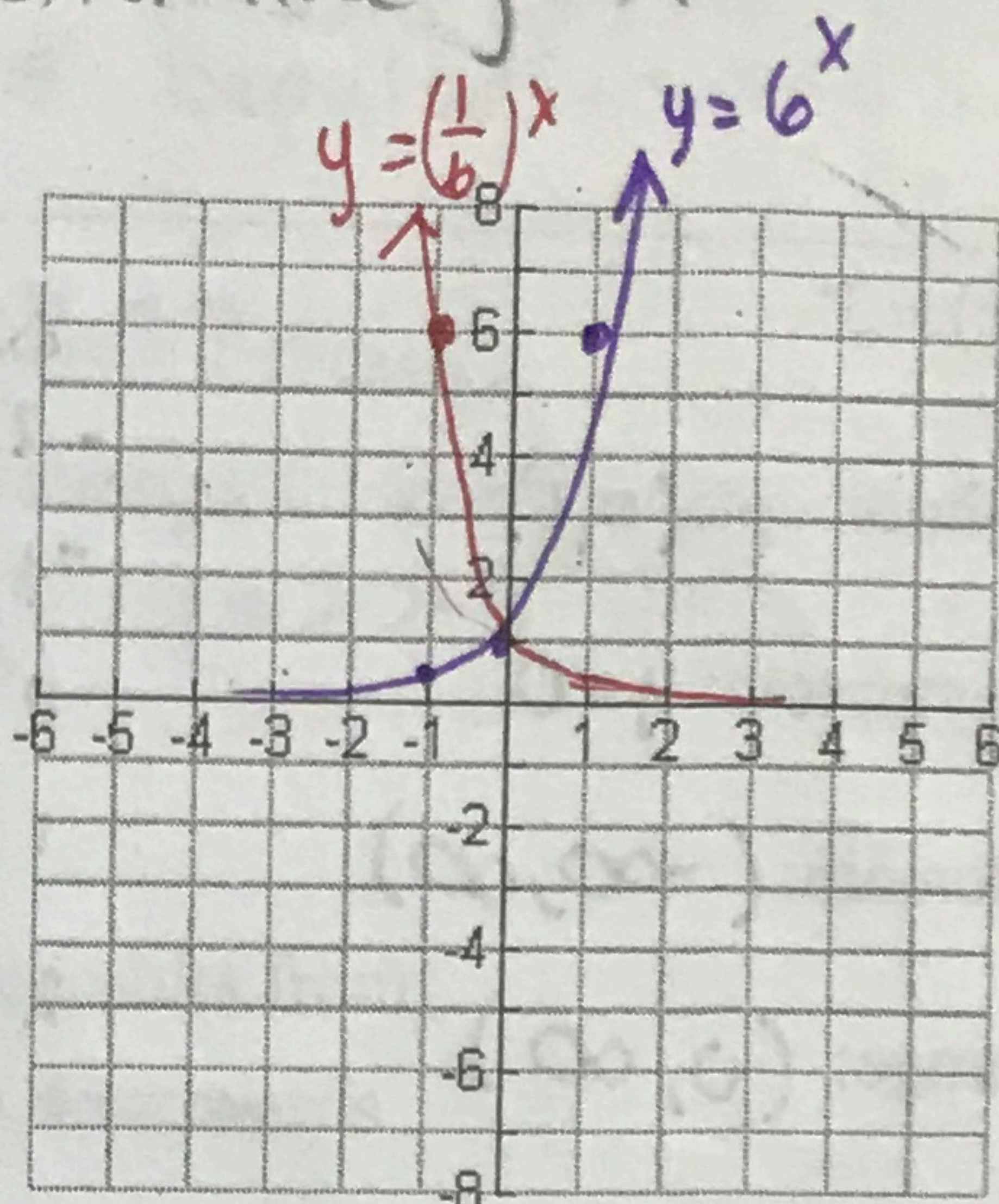
$$\log_2 x = \log_2 2^y$$

$$\log_2 x = y$$

x	1/2	1	2	4
f^{-1}(x)	-1	0	1	2

reflection line $y=x$

37. Graph the functions $f(x) = 6^x$ and $g(x) = \left(\frac{1}{6}\right)^x$ on the same set of axes.



What is the relationship between the graphs?

They are reflected in y axis because $g(x) = 6^{-x}$

38. The number of bacteria (y) in a culture is a function of the number of hours (x) the culture has been growing. The initial number of bacteria present in a culture is 50; the number of bacteria in the culture for each hour is represented in the table below.

x	0	1	3	4	5
y	50	150	450	1350	4050

$$\text{Exp: } y = 51.953(2.294)^x \quad r^2 = .982558$$

- What type of function best models this data?
- Write a function that models the data.
- Predict how many bacteria there will be after 9 hours.

$$y = 51.953(2.294)^9 =$$

$$\approx 91401.085$$

Exactly = Not round
91442 bacteria

39. Order the expressions from least to greatest:

$$\log_3 9 = 2$$

$$\log_3 1 = 0$$

$$\log_9 3 = \frac{1}{2}$$

$$\log_3 \frac{1}{9} = -2$$

$$\log_9 9 = 1$$

$\log_3 \frac{1}{9}$, $\log_3 1$, $\log_9 3$, $\log_9 9$, $\log_3 9$