

$$g(x) = \underbrace{-2}_{\substack{\text{1st} \\ \text{st}}} \cdot 3^{6x+18} + \underbrace{4}_{\text{last}}$$

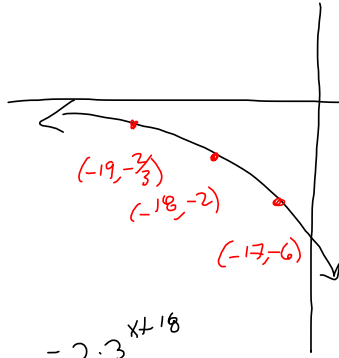
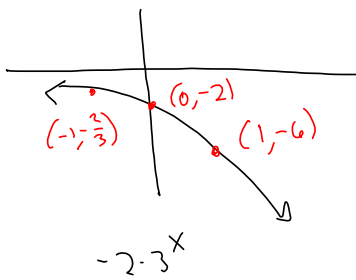
We did this:

$$3^x \xrightarrow{-2y's} -2 \cdot 3^x \xrightarrow{\substack{\text{flip vert.} \\ \text{stretch}}} -2 \cdot 3^{6x} \xrightarrow{\substack{\frac{1}{6}x's \\ \text{shrink hor.}}} -2 \cdot 3^{6x+18} \xrightarrow{\substack{\text{Left } +3! \\ x-3}} -2 \cdot 3^{6x+18} + 4$$

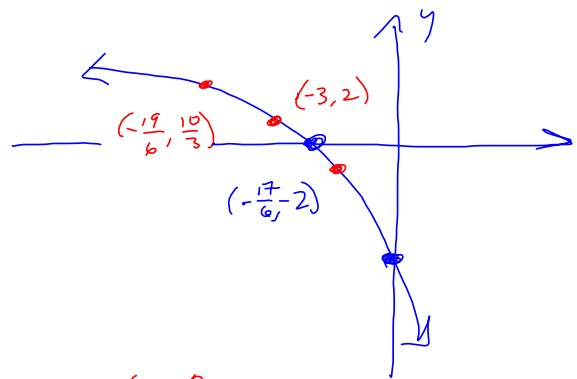
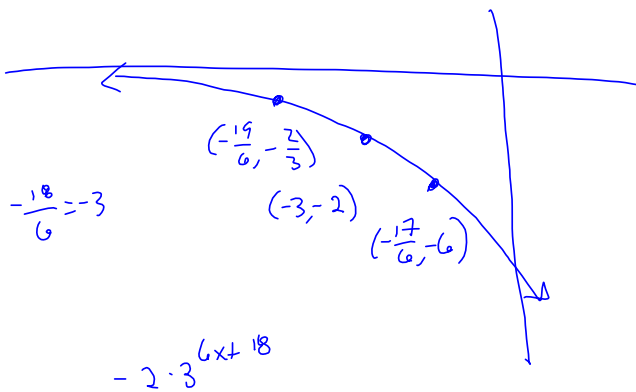
Must factor out the 6.

$$3^x \xrightarrow{-2y} -2 \cdot 3^x \xrightarrow{\substack{\text{Left } 18 \\ x-18}} -2 \cdot 3^{x+18} \xrightarrow{\frac{1}{6}x's} -2 \cdot 3^{6x+18} \xrightarrow{\text{up } 4} -2 \cdot 3^{6x+18} + 4$$

- ① vertical stretch &/or flip
- ② Horiz. Shift
- ③ Horiz. stretch
- ④ Vert. shift



$$-\frac{2}{3} + 4 = \frac{-2+12}{3} = \frac{10}{3}$$



$$-2 \cdot 3^{6x+18} + 4$$

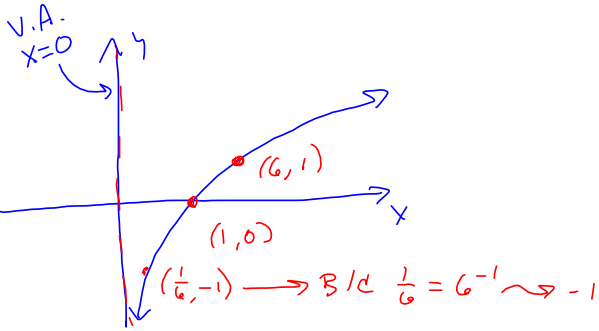
- | | | | |
|---------------------------------|--------------------------------------|--------------|-----------------------------------|
| ① vertical stretch
&/or flip | $-2 \cdot 3^x$ | ① v. stretch | $-2 \cdot 3^x$ |
| ② Horiz. Shift | $-2 \cdot 3^{x+18}$ Left 18 | ② H. stretch | $-2 \cdot 3^{6x}$ Divide x's by 6 |
| ③ Horiz. stretch | $-2 \cdot 3^{6x+18}$ Divide x's by 6 | ③ H. shift | $-2 \cdot 3^{6(x+3)}$ Left 3! |
| ④ Vert. shift | $-2 \cdot 3^{6x+18} + 4$ up 4 | ④ v. shift | up 4 |

$$-2 \log_3(6x+18) + 4 \quad \text{on final}$$

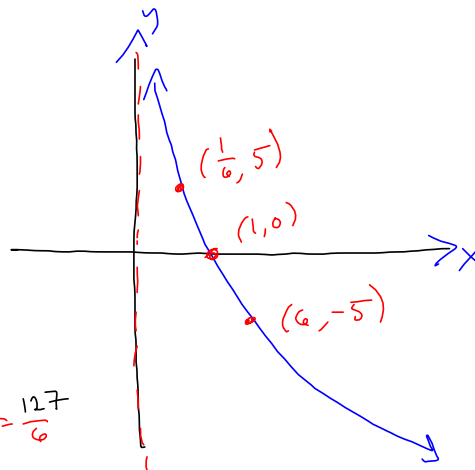
OR

$$-2 \sqrt{6x+18} + 4 \quad \text{Last semester.}$$

$$-5 \log_6(3x-21) + 11$$



Doing horizontal shift, first.

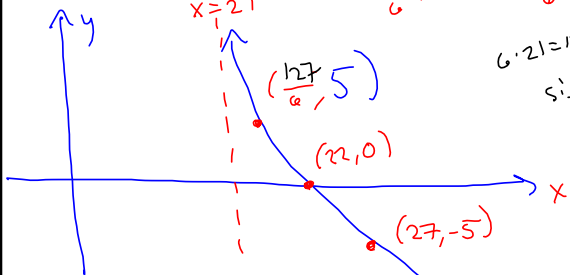


$$f(x) = \log_6(x)$$

$$x=21$$

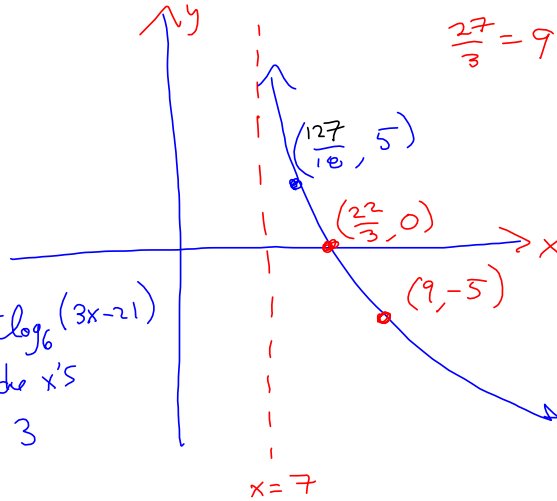
$$\frac{1}{6} + 21 = \frac{1 + 126}{6} = \frac{127}{6}$$

6 * 21 = 126, silly!



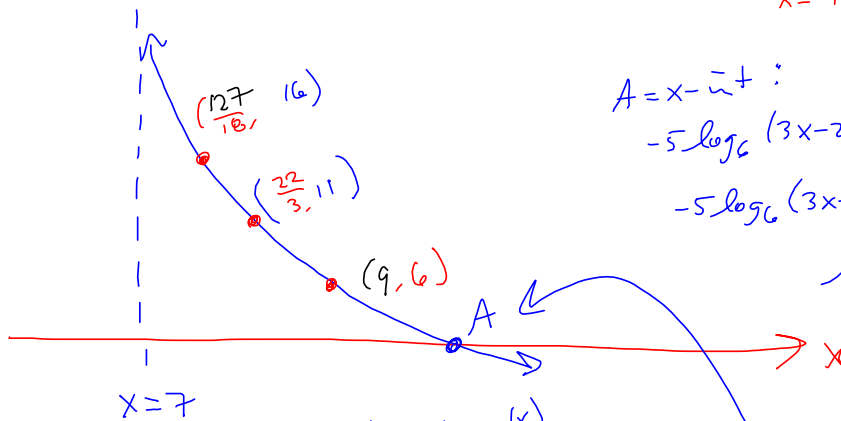
$$-5 \log_6(x-21)$$

RIGHT 21 (Delay)



Divide x's by 3

Now, up 11



$$A = x - 21 + :$$

$$-5 \log_6(3x-21) + 11 = 0$$

$$-5 \log_6(3x-21) = -11$$

$$\log_6(3x-21) = \frac{11}{5}$$

$$3x-21 = 6^{11/5}$$

$$3x = 6^{11/5} + 21$$

$$x = \frac{1}{3} \cdot 6^{11/5} + 7$$

$$-5 f(3x-21) + 11 = g(x)$$

$$-5 \log_6(3x-21) + 11$$

$$D = (7, \infty)$$

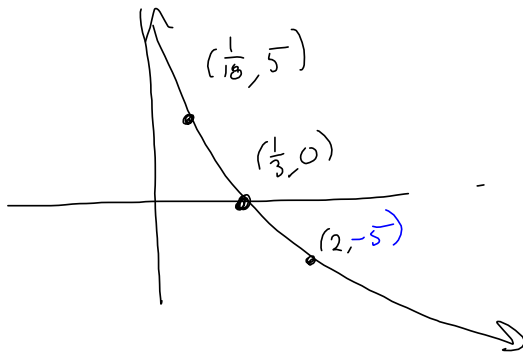
$$R = (-\infty, \infty)$$

$$A = \left(\frac{1}{3} \cdot 6^{11/5} + 7, 0 \right)$$

$$-5 \log_6(3x-21) + 11$$

$\log_6(x)$
 $-5 \log_6(x)$ } See previous page!

$$-5 \log_6(3x)$$

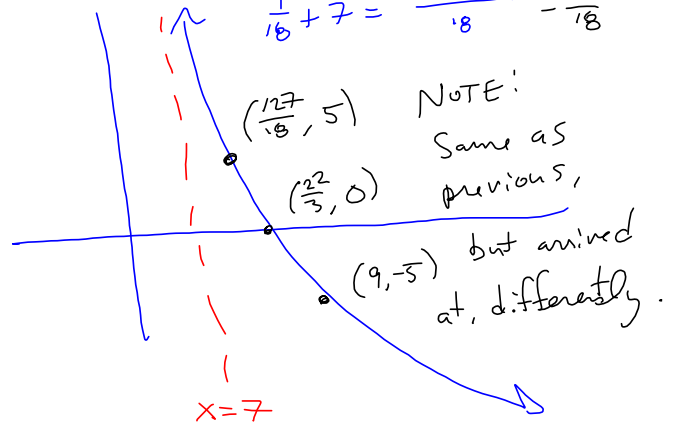


Doing horizontal STRETCH, first.

NOT Right 21!
Right 7!

$$-5 \log_6(3x-21) = -5 \log_6(3(x-7))$$

$$\frac{1}{18} + 7 = \frac{1 + 126}{18} = \frac{127}{18}$$



Final graph:
 See previous page