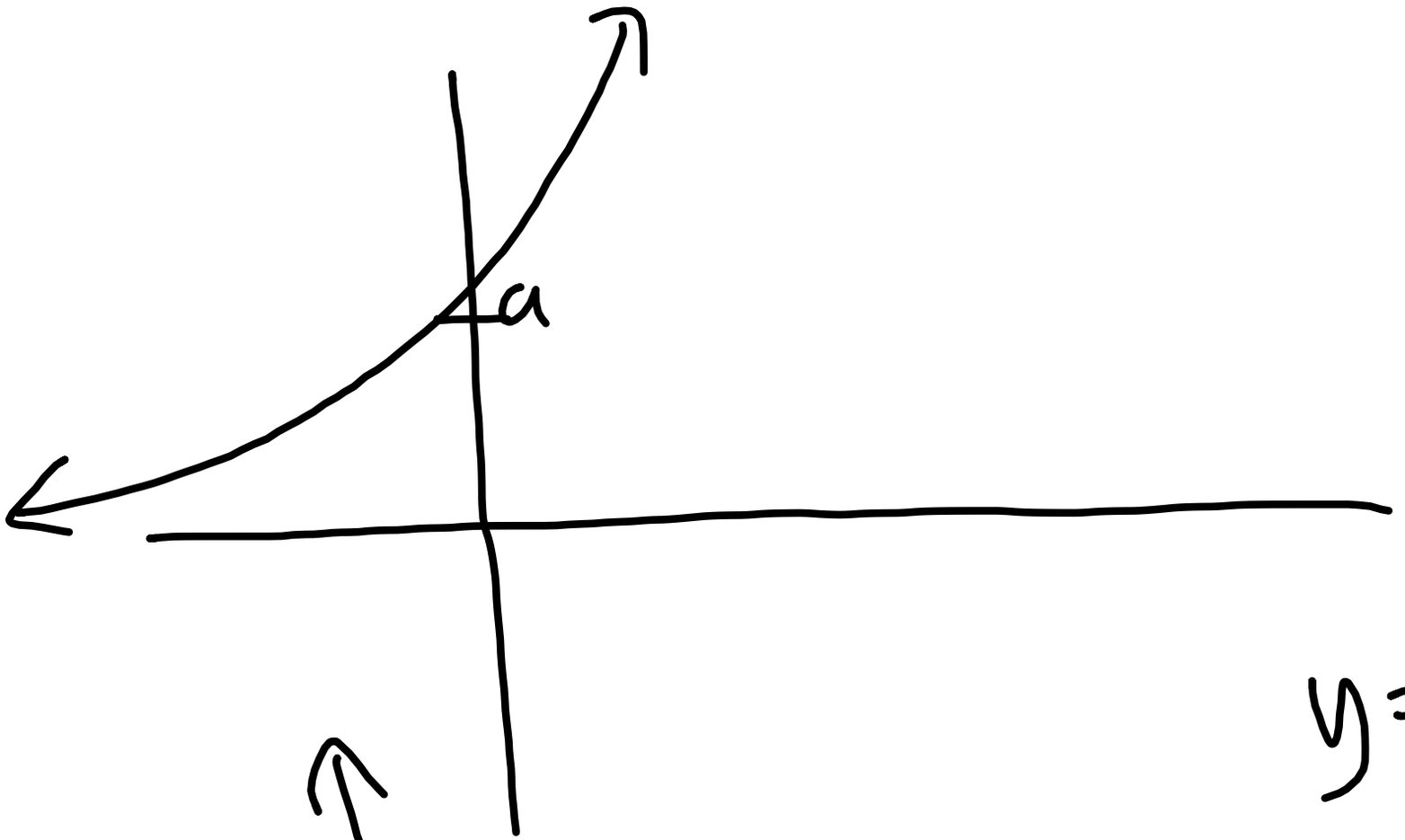
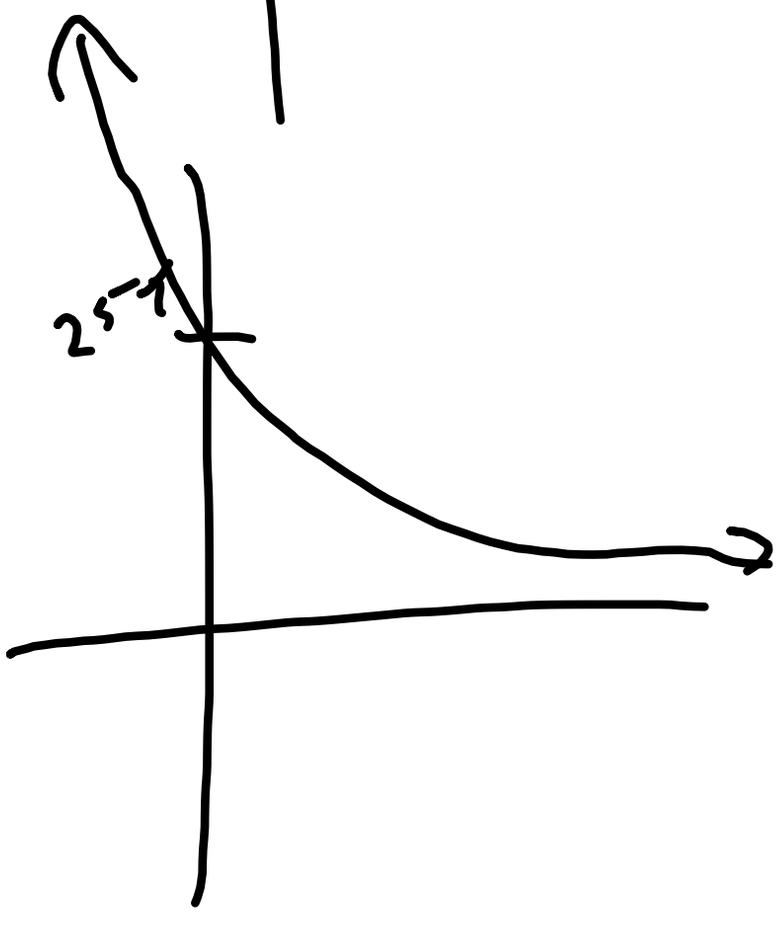


$y = ab^x$

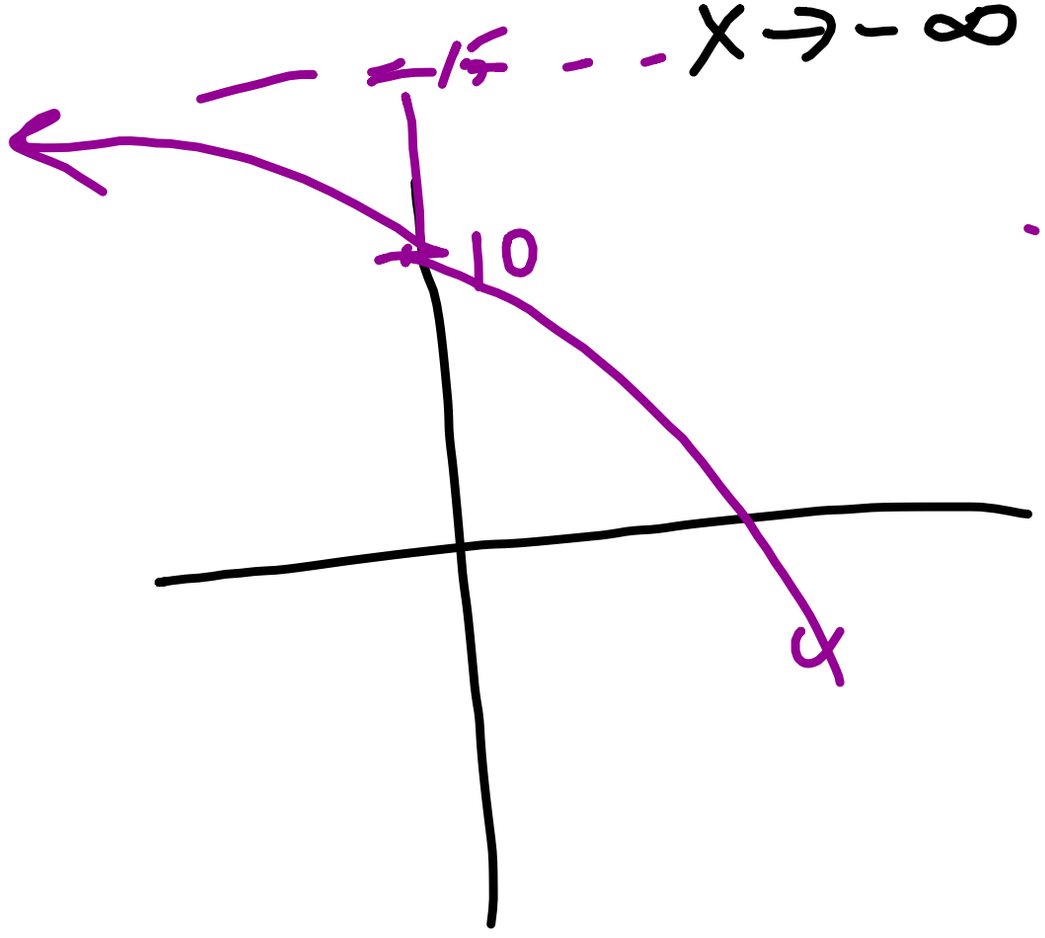
$b > 1$



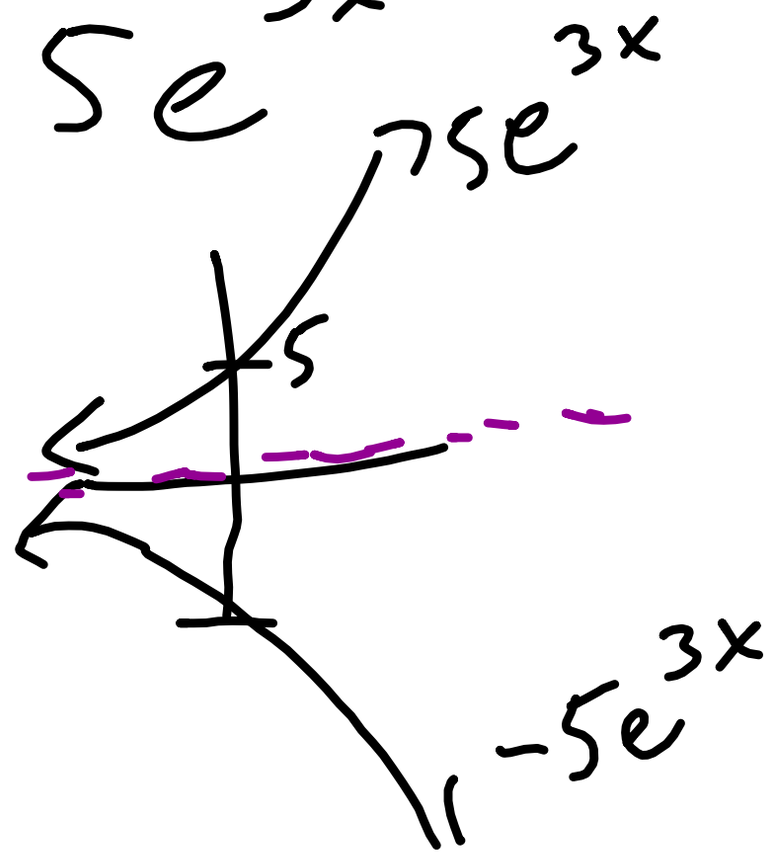
$y = ab^x + 1$

$\lim_{x \to \infty} (257)(0.93)^x = 0$

37 $\lim_{x \to -\infty} 15 - 5e^{3x}$



$= 15 - 5e^{3x}$



25 a

$f(-3) = 5/8$ a Linear

$f(2) = 20$ b exponential

a

$$m = \frac{19 + \frac{3}{8}}{5} = \frac{155}{8} \cdot \frac{1}{5} = \frac{31}{8}$$

$$y - 20 = \frac{31}{8}(x - 2)$$

$(-3, 5/8)$

$(2, 20)$

$y = ab^x$

$y = mx + b$

$y = ab^x$

$20 = ab^2$

$\frac{5}{8} = ab^{-3}$

$20 \cdot \frac{8}{5} = 1 \cdot \frac{b^2}{b^{-3}}$

$32 = b^5$

$b = 2$

$20 = a(2)^2$

$5 = a$

$y = 5(2)^x$

Logs

$$y = \log_b x \iff b^y = x$$

$$y = \log x \iff 10^y = x$$

$$y = \log 100 \iff 10^y = 100$$

1. $\log(1) = 0$

$\Updownarrow$

$10^0 = 1$

$(\log_b(1) = 0)$

2. $\log(10) = 1$

$\Updownarrow$

$10^1 = 10$

$(\log_b(b) = 1)$

$\Updownarrow$

$b^1 = b$

3. $\log(ab) = x \iff$

$\log(a) = y \iff$

$\log(b) = z \iff$

$ab = 10^x$

$a = 10^y$

$b = 10^z$

$10^x = 10^y \cdot 10^z = 10^{y+z}$

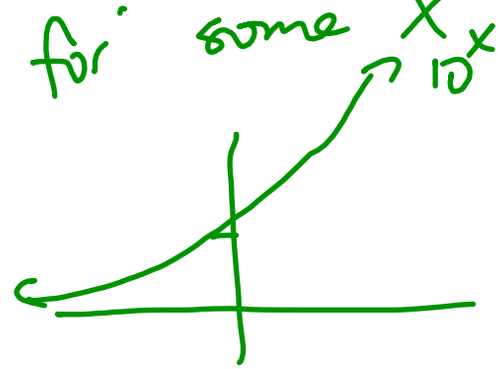
$x = y + z$

$\boxed{\log(ab) = \log(a) + \log(b)}$

error $\log(a+b) \neq \log a + \log b$

$\neq (\log a)(\log b)$

4. $\log(a^n)$ if $a>0$ $\log(a) = x$ $\Leftrightarrow$ $a = 10^x$ then for some x



$= \log(10^x)^n$

$= \log(10^{xn}) = xn$

$= n\log a$

$$\boxed{\log(a^n) = n\log a}$$

(5) $\log(a^{-1}) = -\log a$

(6) $\log\left(\frac{a}{b}\right) = \log(a) - \log(b)$

$*(5+3)$