I. Finish the first pass at exponentials

II Talk about inverses introduce logs. logarithmic scale.
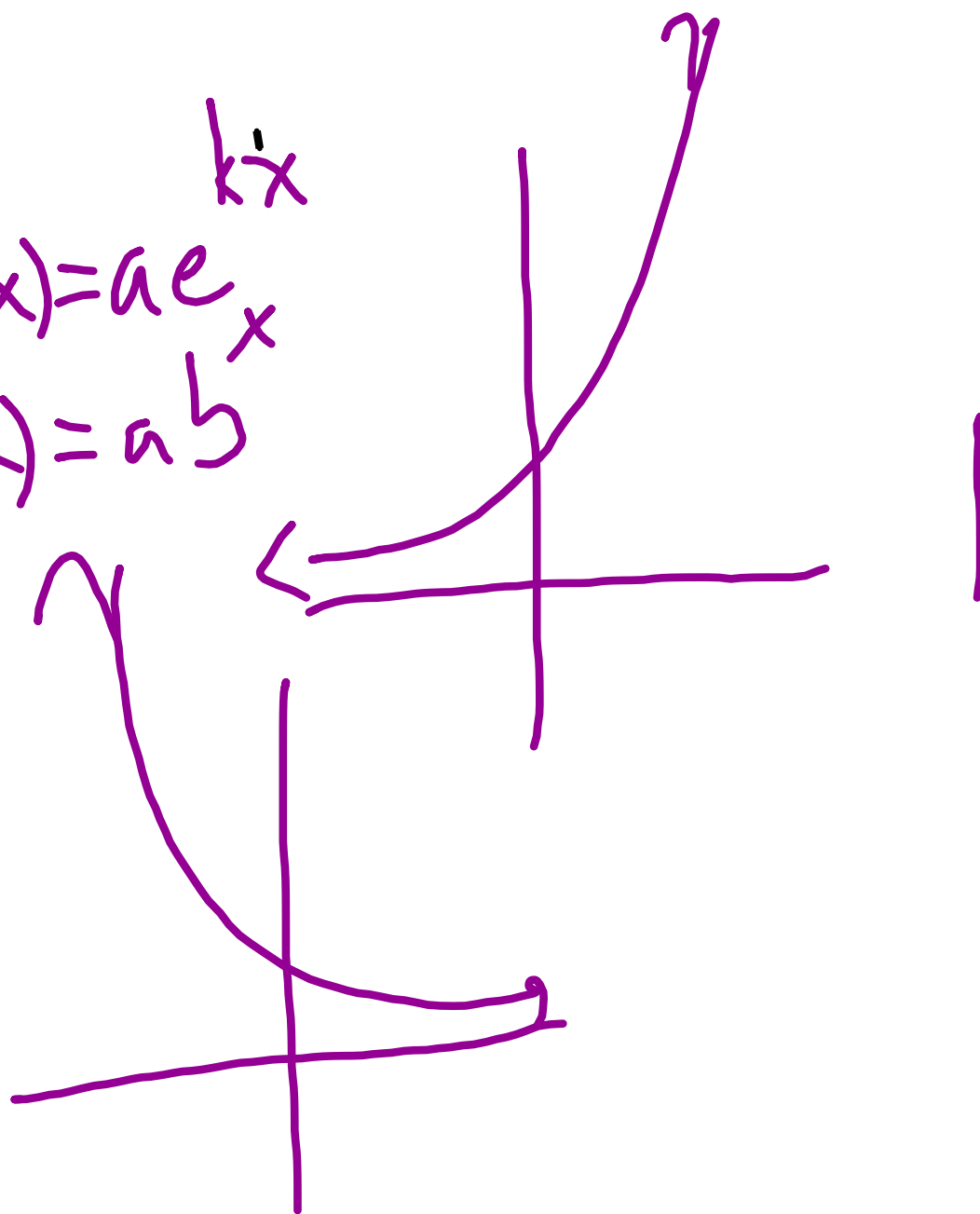
III Applications revisit exponentials/logs,

· <u>Graphing</u>

1. General shape $\quad f(x) = ae^{kx}$
$$f(x) = ab^x$$

or

2. Domain: the set of all x-values (valid inputs)

Range: set of outputs.

for exponentials: Domain = $\{\mathbb{R}\}$

$$f(x) = ab^x$$

Range: $a > 0$ $\{y > 0\}$
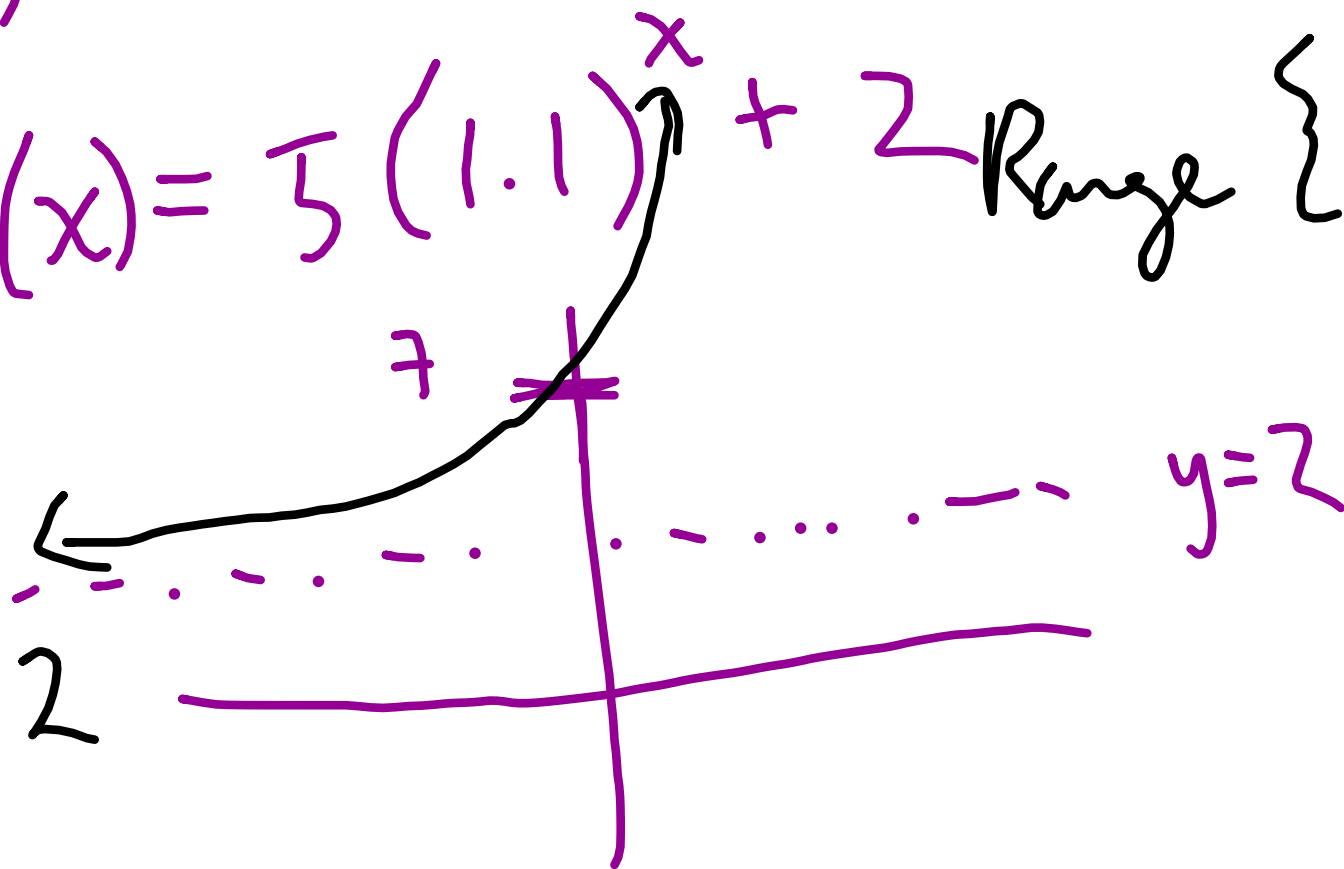
$a < 0$ $\{y < 0\}$

3. we can translate exponentials

$$f(x) = ab^x + d$$

Domain: $\{\mathbb{R}\}$

ex $\quad f(x) = 5(1.1)^x + 2$

Range $\{y > 2\}$

$$\lim_{x \to -\infty} f(x) = 2$$

y=2

3b

$$f(x) = 5(2)^{x+1}$$

$$= 5(2)^x \cdot 2$$

$$= 10(2)^x$$

note: one typically does not talk about horizontal translations

4. Concavity $\rightarrow$ concave up

$\searrow$ concave down.

Concave up.