$$y = \frac{1}{x}$$

0	$\frac{1}{0} = $ undef
-1	$\frac{1}{-1} = -1$
-2	$\frac{1}{2}$
-3	$\frac{1}{3}$
$-\frac{1}{2}$	$\frac{1}{\frac{1}{2}} = 2$
$-\frac{1}{3}$	$\frac{1}{\frac{1}{3}} = 3$

Butterfly

$$y = \frac{1}{x^2}$$

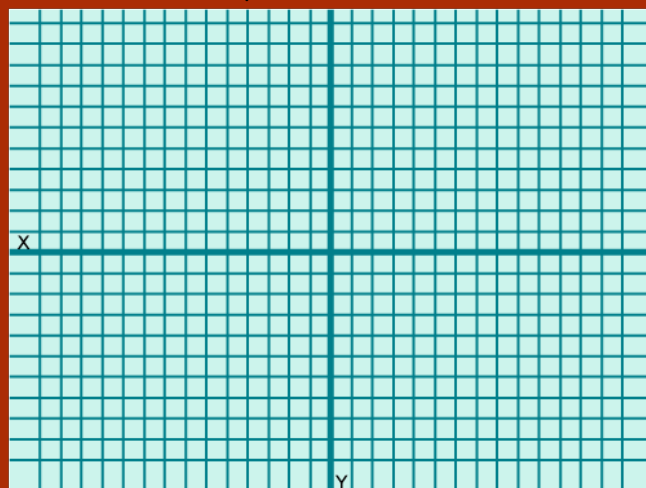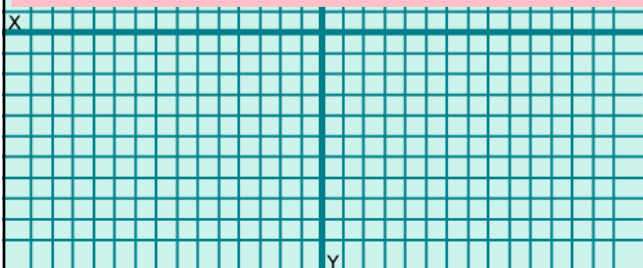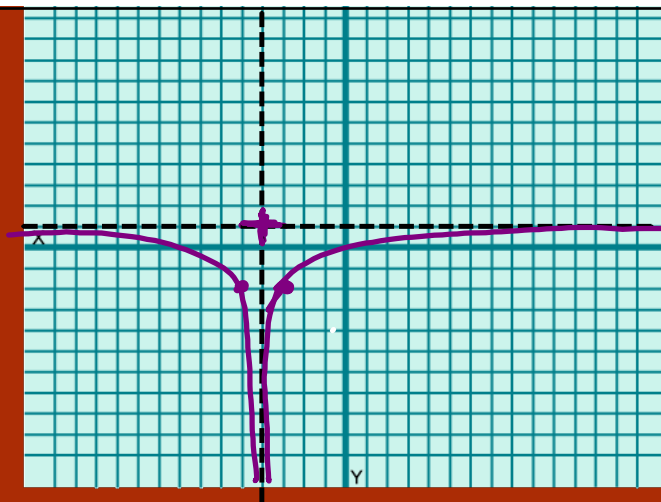|	
0	undef.
-1	$\frac{1}{1^2} = 1$
-2	$\frac{1}{2^2} = \frac{1}{4}$
-3	$\frac{1}{3^2} = \frac{1}{9}$

Butt crack
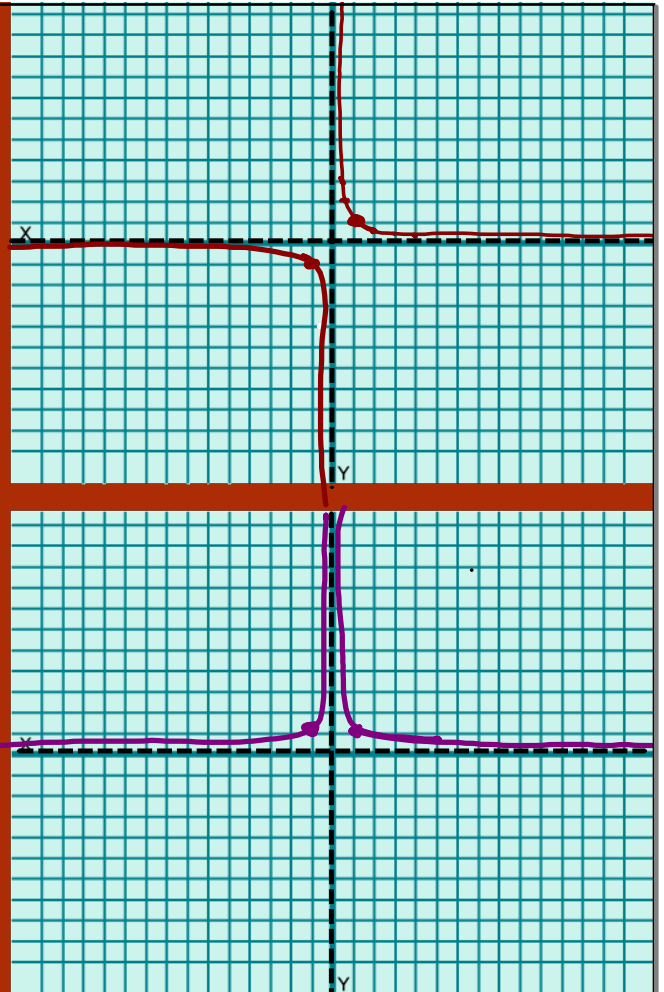
$$y = \frac{-3}{(x+4)^2} + 1$$

up 1

Left 4

$$\frac{1 \mid x-3}{}$$

$$-3 \cdot \frac{1}{x^2}$$

APPLICATIONS

Distance. Rate, + Time

$R = \dfrac{D}{T} \cdot \qquad D = R \cdot T \qquad$ $\boxed{T = \dfrac{D}{R}}$

Example 1 (green handout)

George = 15 $\dfrac{km}{h}$ in still water

	D ÷	R =	T
Up	35	15−x	$\dfrac{35}{15-x}$
down	140	15+x	$\dfrac{140}{15+x}$

x = speed of river

$\dfrac{(15-x)}{(15+x)} \quad \dfrac{35}{15-x} = \dfrac{140}{15+x} \quad \dfrac{(15-x)}{(15+x)} \quad x \neq 15, -15$

$35(15+x) = 140(15-x)$

$525 + 35x = 2100 - 140x$
$ +140x \qquad -525$

$\dfrac{175x}{175} = \dfrac{1575}{175}$

$x = 9 \ \dfrac{km}{h}$

$D \div R = T$

	D	R	T
Up	140	15-x	$\frac{140}{15-x}$
down	140	15+x	$\frac{140}{15+x}$

The total trip takes 4 hours.

$$\frac{140}{15-x} + \frac{140}{15+x} = 4$$

The trip upstream (took) 2 hours longer than the trip downstream.

$$\text{longer time} - \text{shorter time} = 2$$

$$\frac{140}{15-x} - \frac{140}{15+x} = 2$$

$$\frac{140}{15-x} = 2 + \frac{140}{15+x}$$