

HAT

8.3 Graphing Reciprocal Functions

1/18/18

Warm Up: Your family is driving 250 miles to Kansas City. How long will your trip take if your average speed is:

a. 60 mph? $T = \frac{250}{60}$ 4 hrs. 10 mins $T = \frac{D}{R}$

b. 70 mph? $T = \frac{250}{70}$ 3 hrs. 35 mins

c. 45 mph? $T = \frac{250}{45}$ 5 hrs. 34 mins

d. 10 mph? $T = \frac{250}{10}$ 25 hours

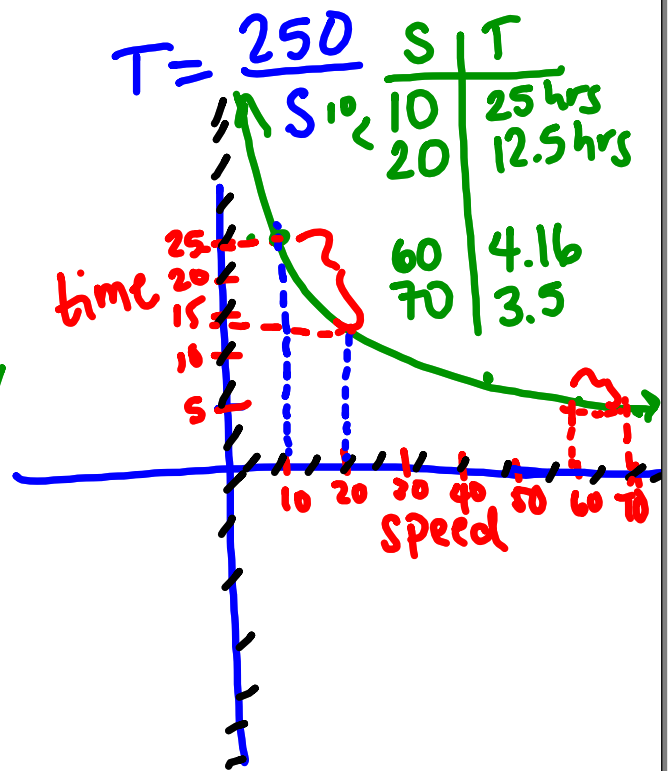
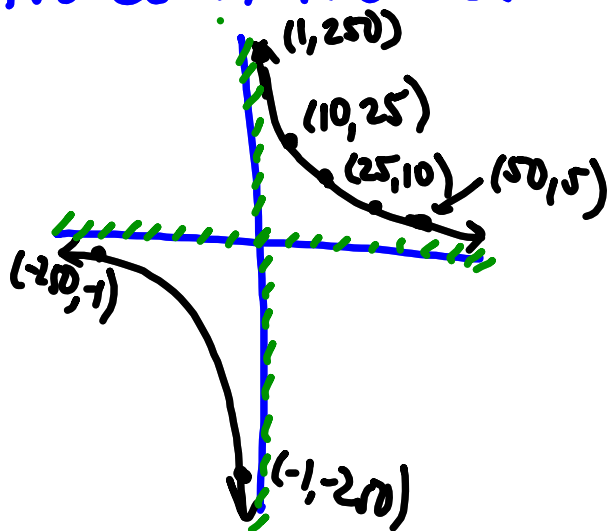
Write an equation to represent the time of the trip T , given the average speed, S .

$$T = \frac{250}{S} \text{ (inverse variation)}$$

Theoretical Domain vs. Practical Domain

$$y = \frac{250}{x}$$

No context



For each example:

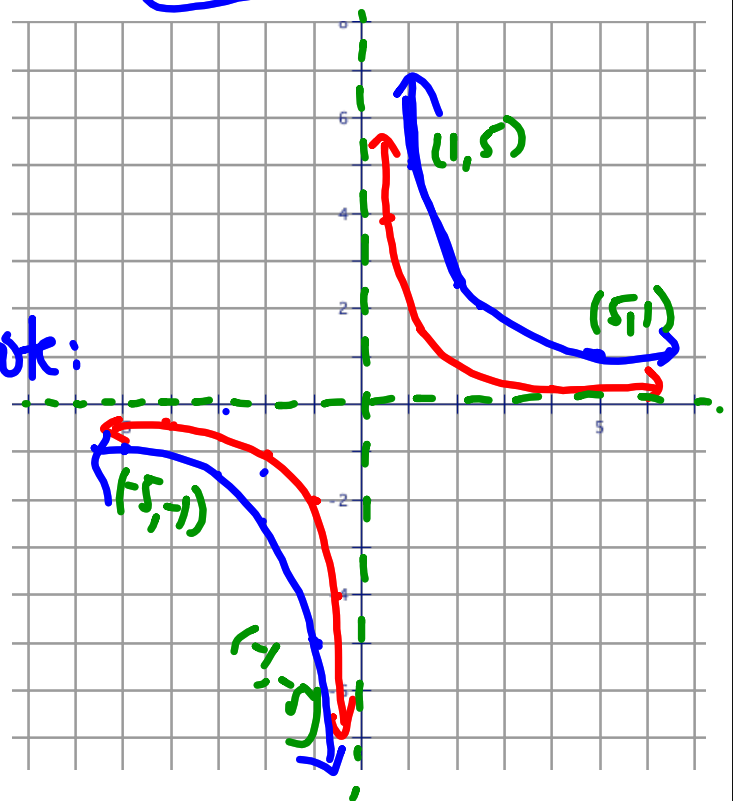
- a. Sketch the graph.
- b. State the domain and range.
- c. Write equations for all asymptotes.

Ex#1: $f(x) = \frac{2}{x}$

$g(x) = \frac{5}{x}$ $5 \cdot \frac{1}{x}$

Vertical Asymptote:
 $x = 0$

Horizontal Asymptote:
 $y = 0$



Ex#2: $f(x) = \frac{-3}{x} + 1$

Vertical asymptote

$x=0$

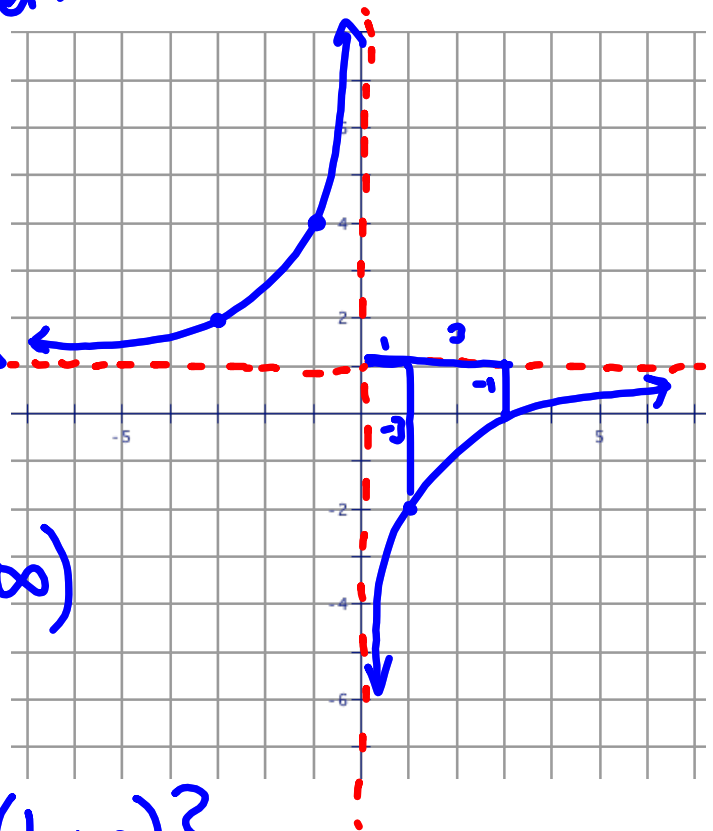
Domain:

$\{x \mid x \in (-\infty, 0) \cup (0, \infty)\}$

Range:

$\{y \mid y \in (-\infty, 1) \cup (1, \infty)\}$

No horiz. shift
Vertical shift
Horiz. Asym: $y=1$



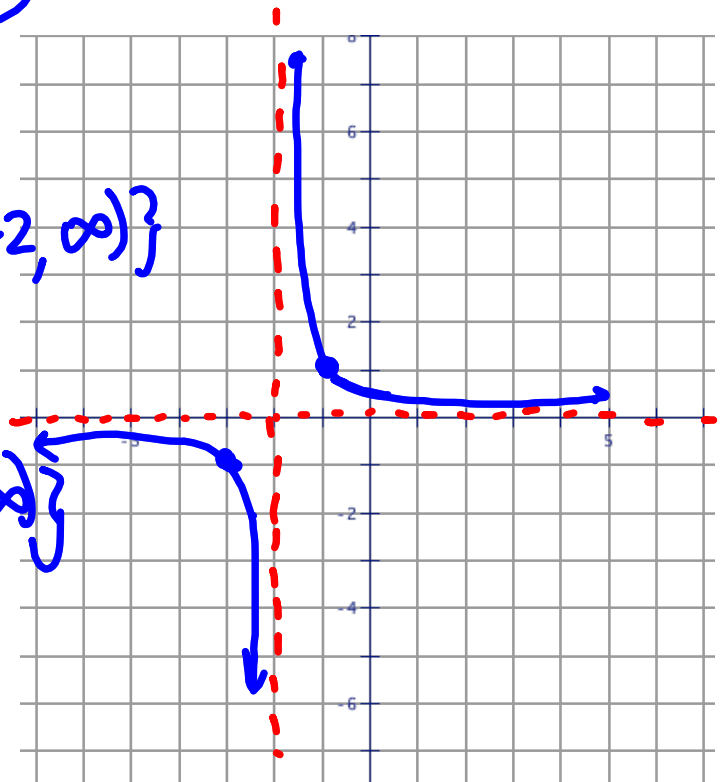
Ex#3: $f(x) = \frac{1}{x+2}$

Domain:

$$\{x \mid x \in (-\infty, -2) \cup (-2, \infty)\}$$

Range:

$$\{y \mid y \in (-\infty, 0) \cup (0, \infty)\}$$



Ex#4: $f(x) = \frac{2}{x-1} - 4$

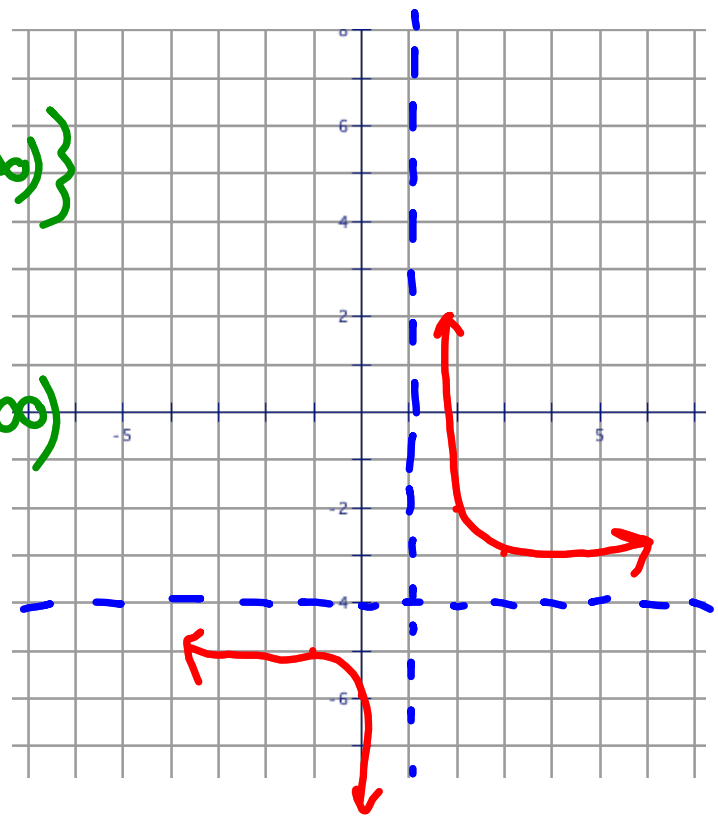
Domain:

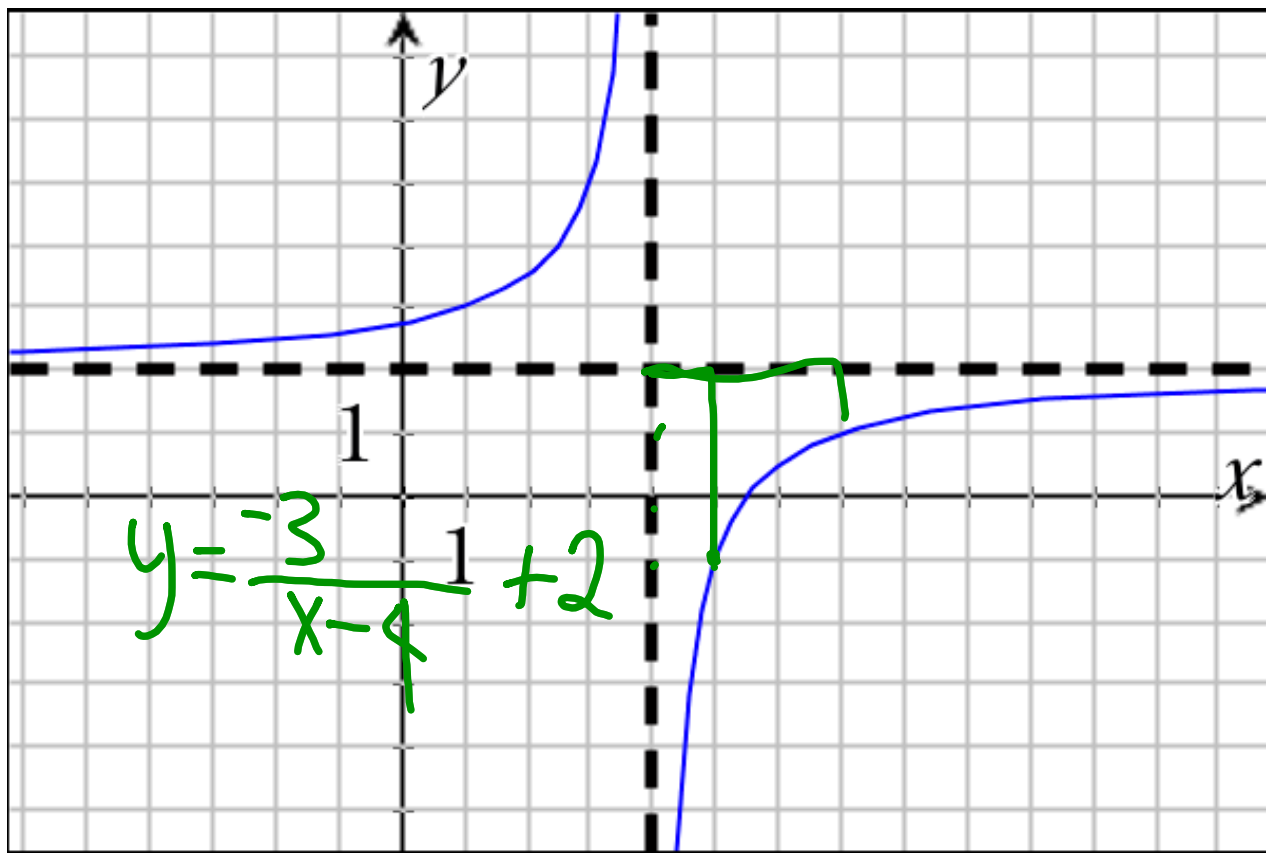
$$\{x \mid x \in (-\infty, 1) \cup (1, \infty)\}$$

Range:

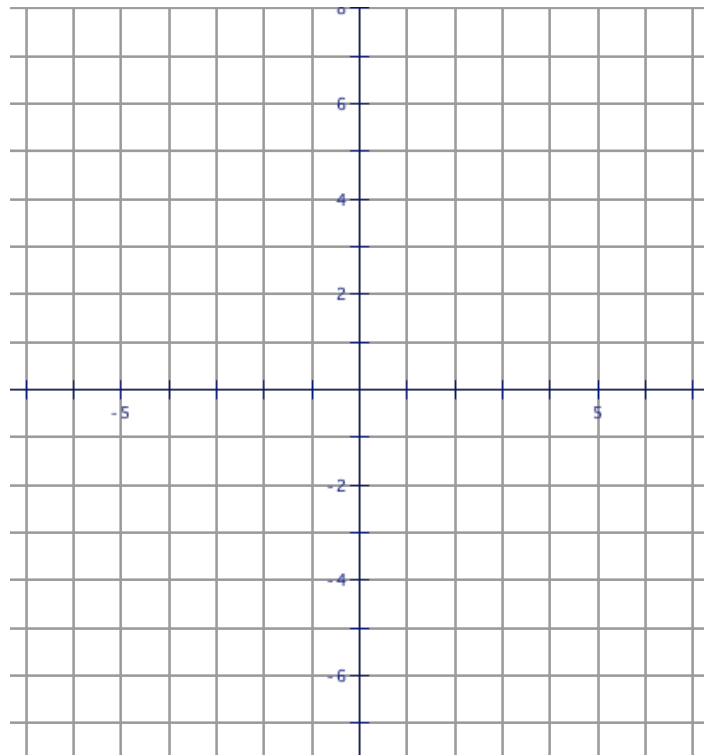
$$\{y \mid y \in (-\infty, -4) \cup (-4, \infty)\}$$

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Ex#5: Graph $f(x) = \frac{x+2}{x-1}$



Assignment:

page 548 #9, 15, 17, 21, 23, 25, 29, 38, 41