These points are part of a (Direct Variation) relationship.
Find the value of the missing coordinate.

(25,36) and (8,y)

$y = 1.44x \Rightarrow 1.44 \cdot 8$

$K = \frac{y}{x}$ $\frac{36}{25} = \frac{y}{8}$ $y = 11.52$

These points are part of an (Inverse Variation) relationship.
Find the value of the missing coordinate.

(x,80) and (12,96)

$1152 = x \cdot 80$

$K = xy$ $80x = 12 \cdot 96$
                         $80x = 1152$
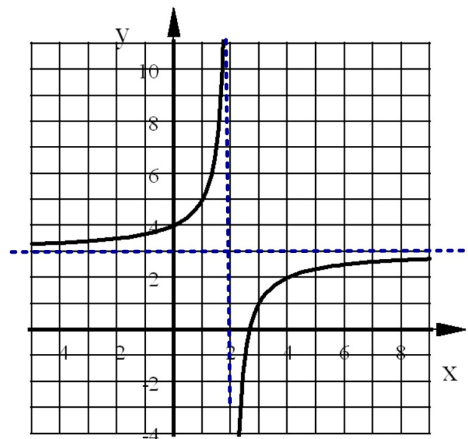 $x = 14.4$

Write the equation of this graph which is a transformation
of
$$y = \frac{2}{x}$$

Since the branches are in "Quad II and IV"
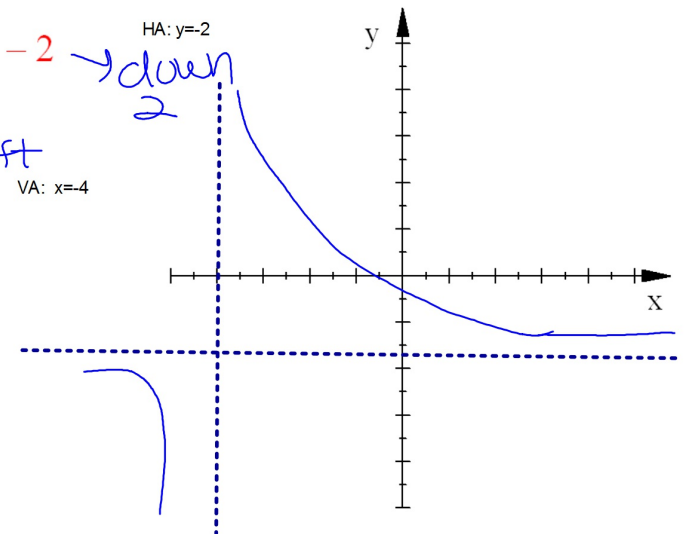there is an x-axis reflection

2 right

3 up

$$y = \frac{-2}{x-2} + 3$$

State the equations of the asymptotes then sketch the graph
showing asymptotes as dashed lines.

$$y = \frac{15}{x+4} - 2 \quad \text{down} \; 2$$

15

4 left

since 15
is a "big" number
the branches are
pushed far from the
asymptotes

HA: y=-2

VA: x=-4

Q varies inversely with the cube of T and jointly with R and the square of M.   Q=481.25 when M=10, R=14, and T=2.

1. Find the variation constant. $481.25 = \dfrac{K(14)(100)}{8}$

$Q = \dfrac{K\,R\,M^2}{T^3}$

Find the value of T when Q=12, M=9, and R=25

$Q = \dfrac{2.75\,R\,M^2}{T^3}$

$481.25 = 1400K$

$\dfrac{481.25}{1400} = \dfrac{1400K}{1400}$ $= 2.75$

$12 = \dfrac{2.75(25)(81)}{T^3}$

$\dfrac{12}{1} = 5568.75\,\dfrac{T^3}{T^3}$ $T = 7.74$

The amount of caramel produced varies directly with the number of hours the candy store is open.   210 lbs of caramel is made when the store is open 12 hours.

1. Find the variation constant, including units.

$K = \dfrac{Y}{X} = \dfrac{amt\ ot\ caramel}{\#\ of\ hrs} = \dfrac{210\,lb}{12}$

2. How many hours will be needed to produce 250 lbs of caramel?

$K = 17.5$ $\frac{lb}{hr}$

$\dfrac{210}{12} = \dfrac{250}{X}$

$210X = 3,000$

$X = 14.3\ hrs$