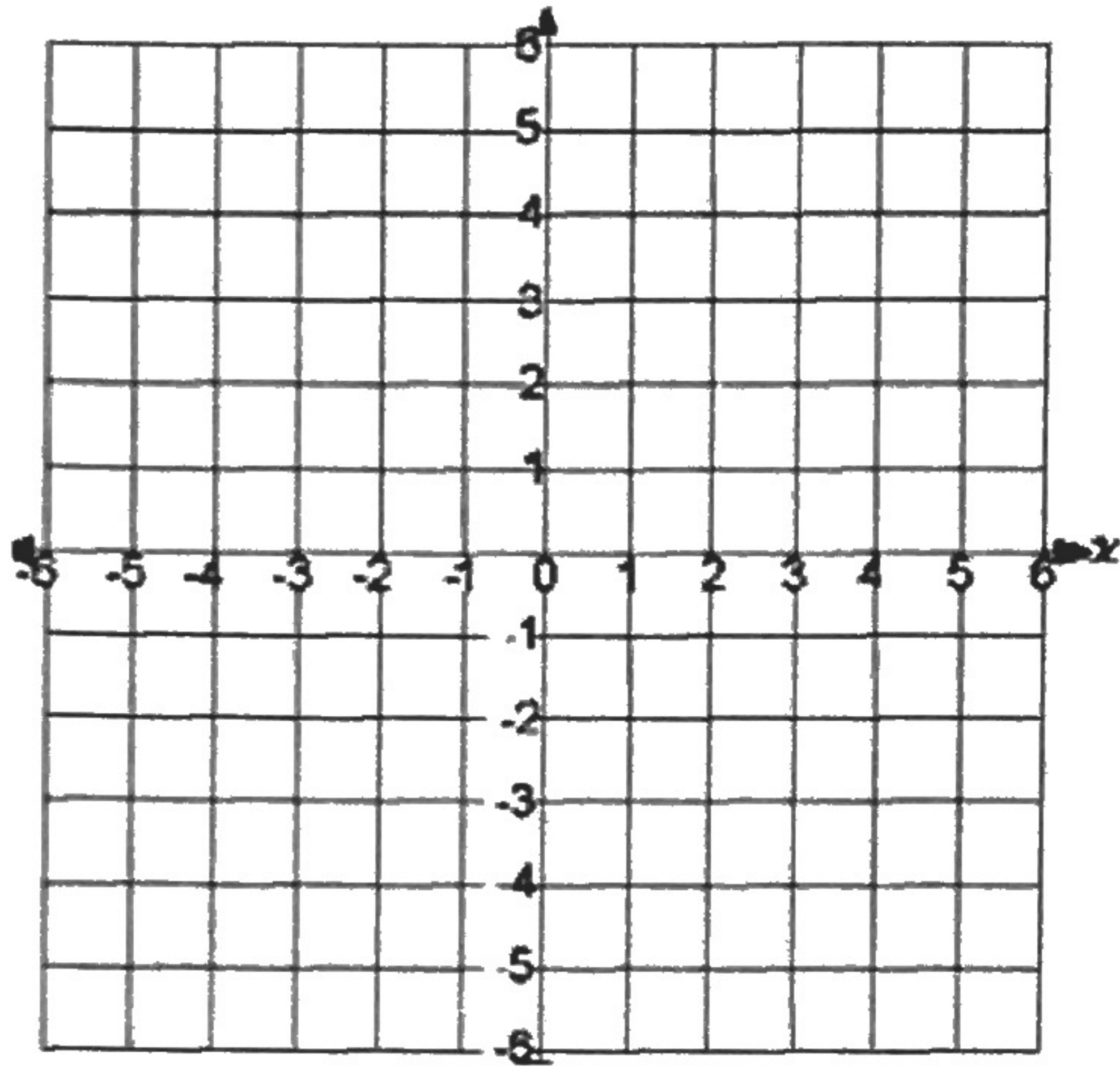


5AB Rational Functions & Equations

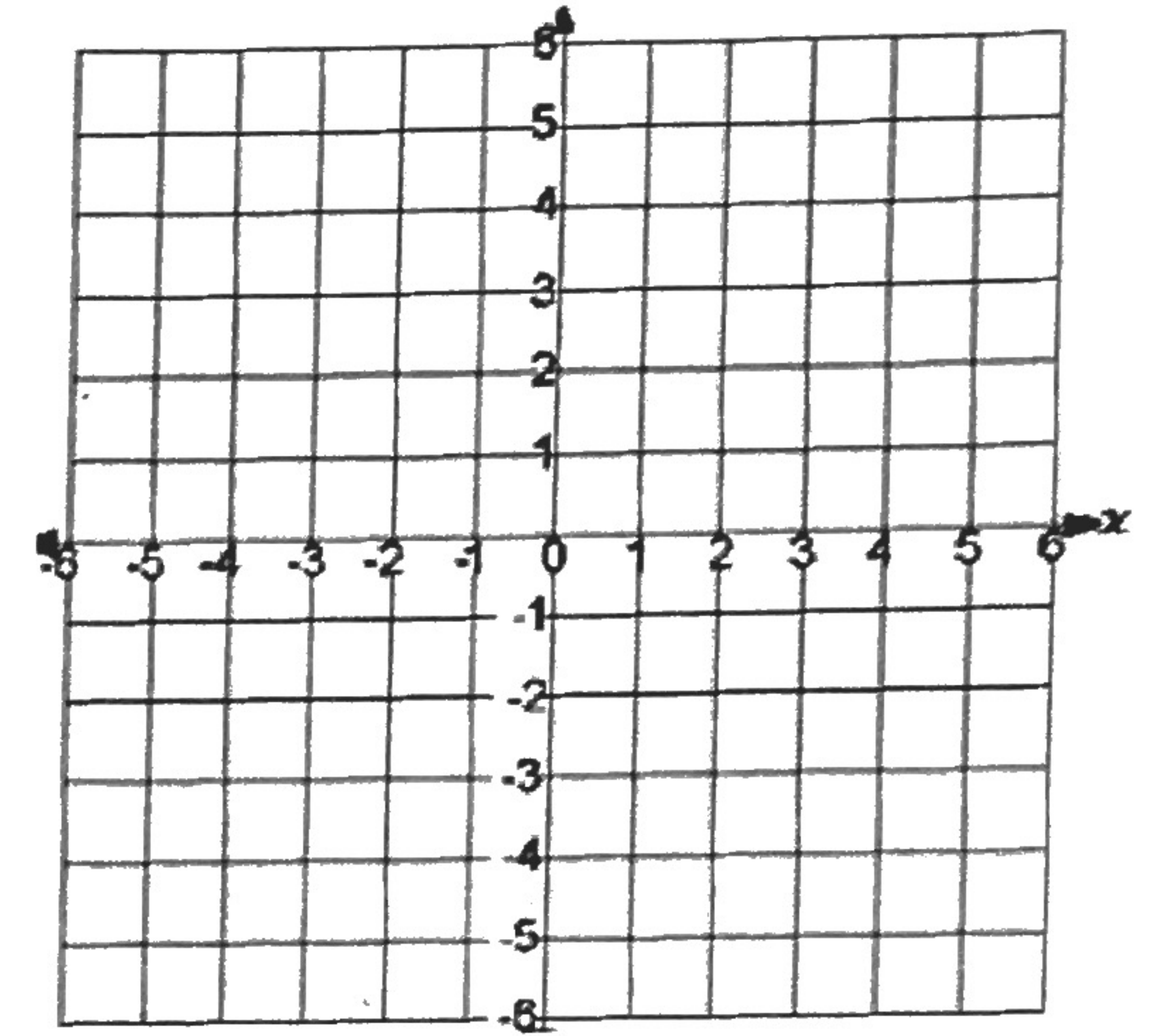
Practice Quest

1. Graph the function, including dotted lines for all asymptotes, closed circles for intercepts, open circles for holes, labeling all.

a. $f(x) = \frac{-4}{x-2}$



b. $g(x) = \frac{2x^2 + 10x + 12}{x^2 + 3x + 2}$



2. Write the equation of any asymptotes or coordinates of any removable discontinuities:

a. $f(x) = \frac{x^2 + 8x - 20}{x - 1}$

b. $f(x) = \frac{2x^2 - 4x + 8}{3x^2 - 27}$

3. Find the coordinate(s) of the point(s) of intersection of $f(x) = \frac{x}{x+3}$ and $g(x) = \frac{8}{x+6}$

4. What is the solution of the equation $\frac{2m^2 + 3m - 5}{m^2 + 4m - 5} = 4$?

5. It takes 5 people 20 hours to build a small hut for the homeless. $h(p) = \frac{k}{p}$, $h = \# \text{ hours}$ and $p = \# \text{ people}$.

a. Solve for the constant (k) using the information.

6. How long would it take 16 people to build the hut? Evaluate using your equation, using your "k"

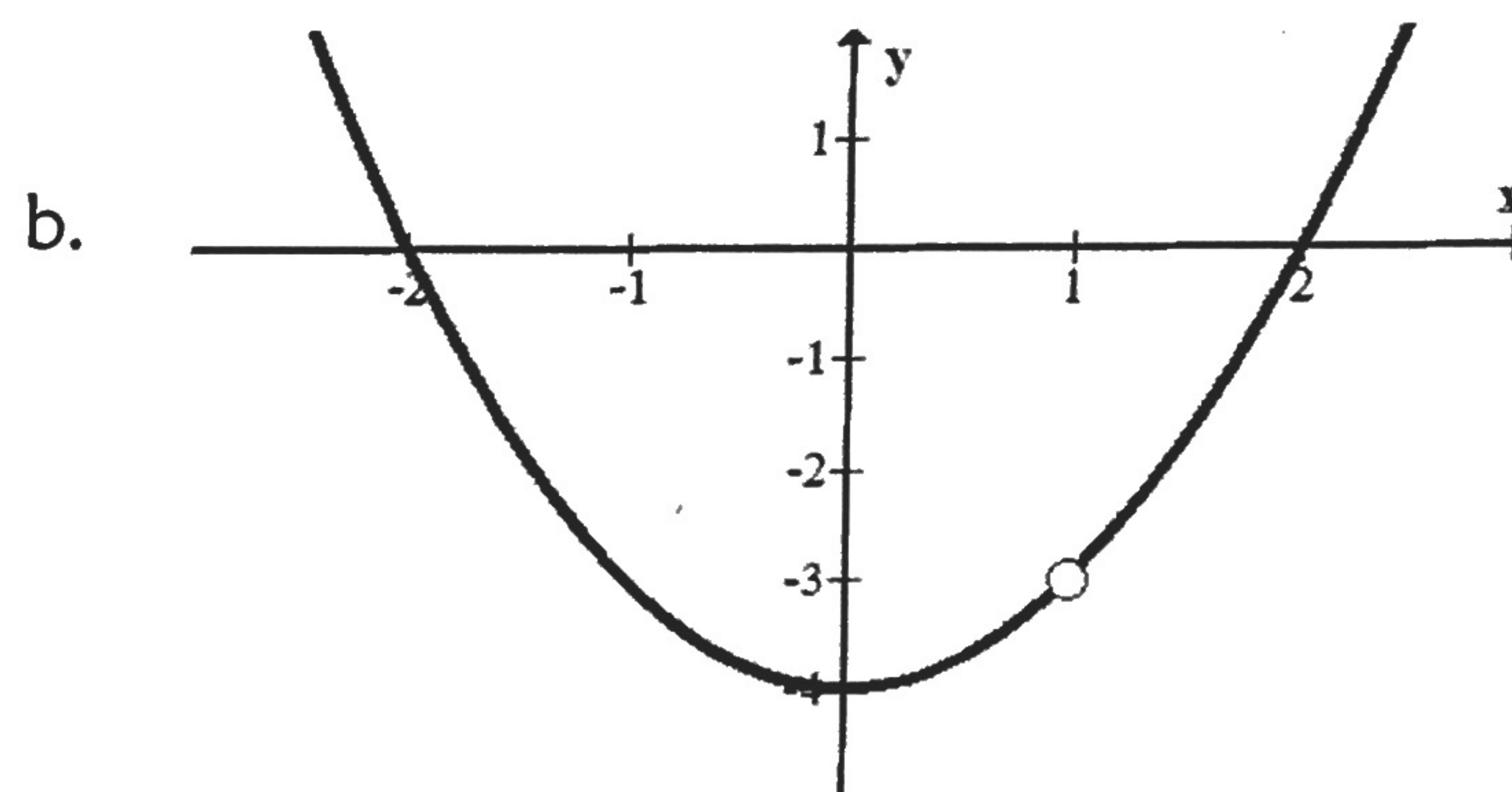
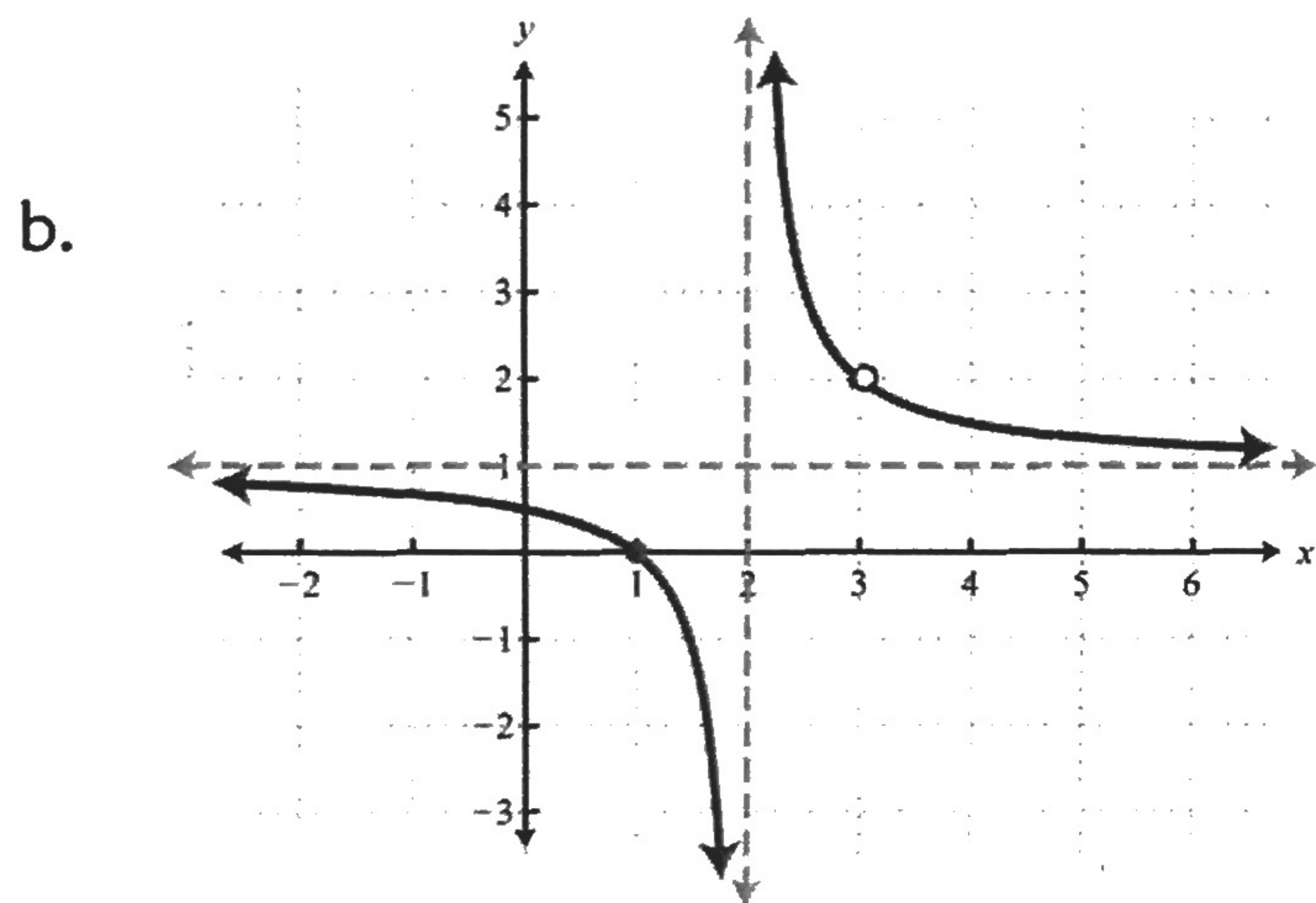
i. 4 hours

ii. 6 hours 15 minutes

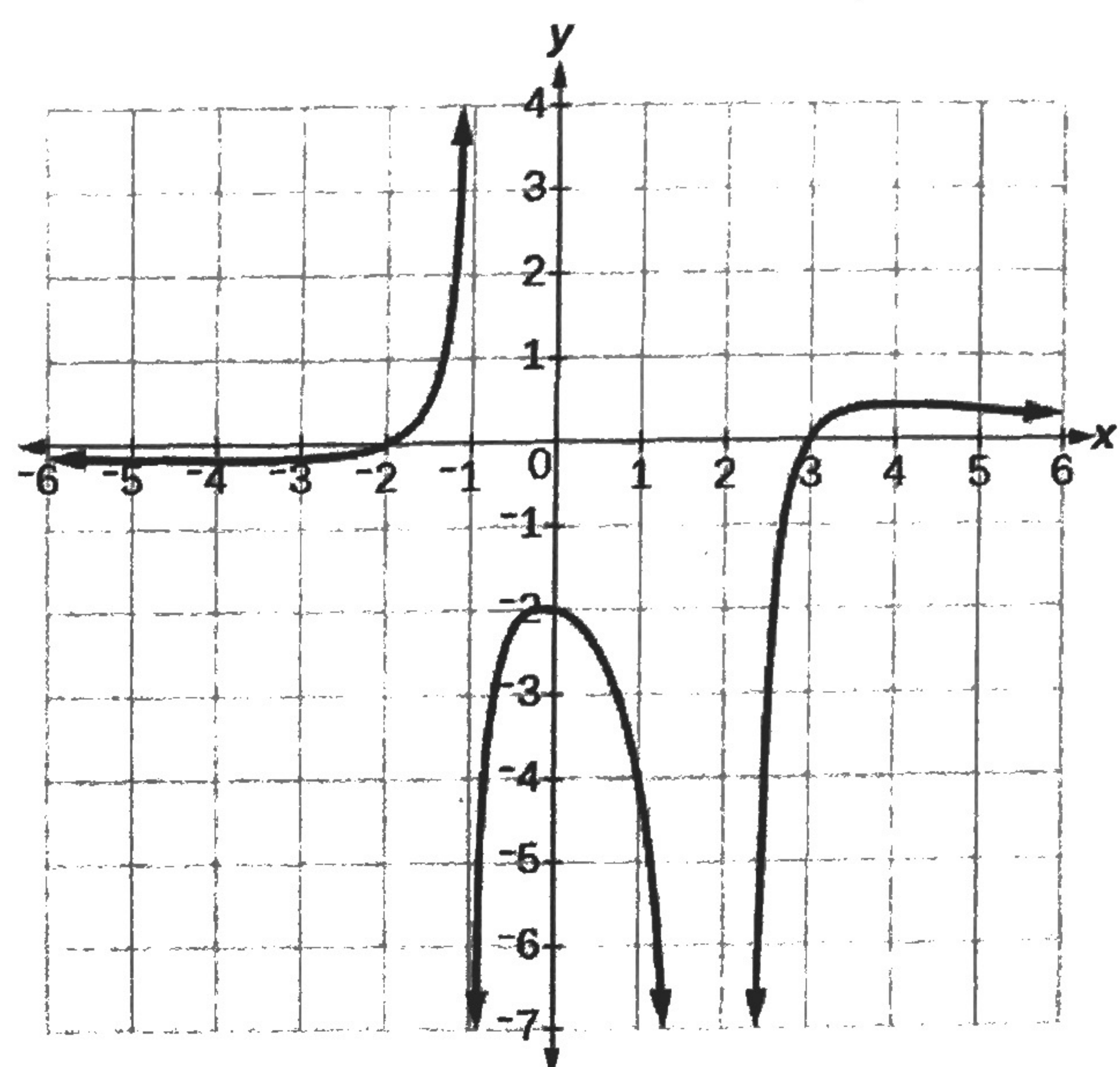
iii. 6 hours 25 minutes

iv. 64 hours

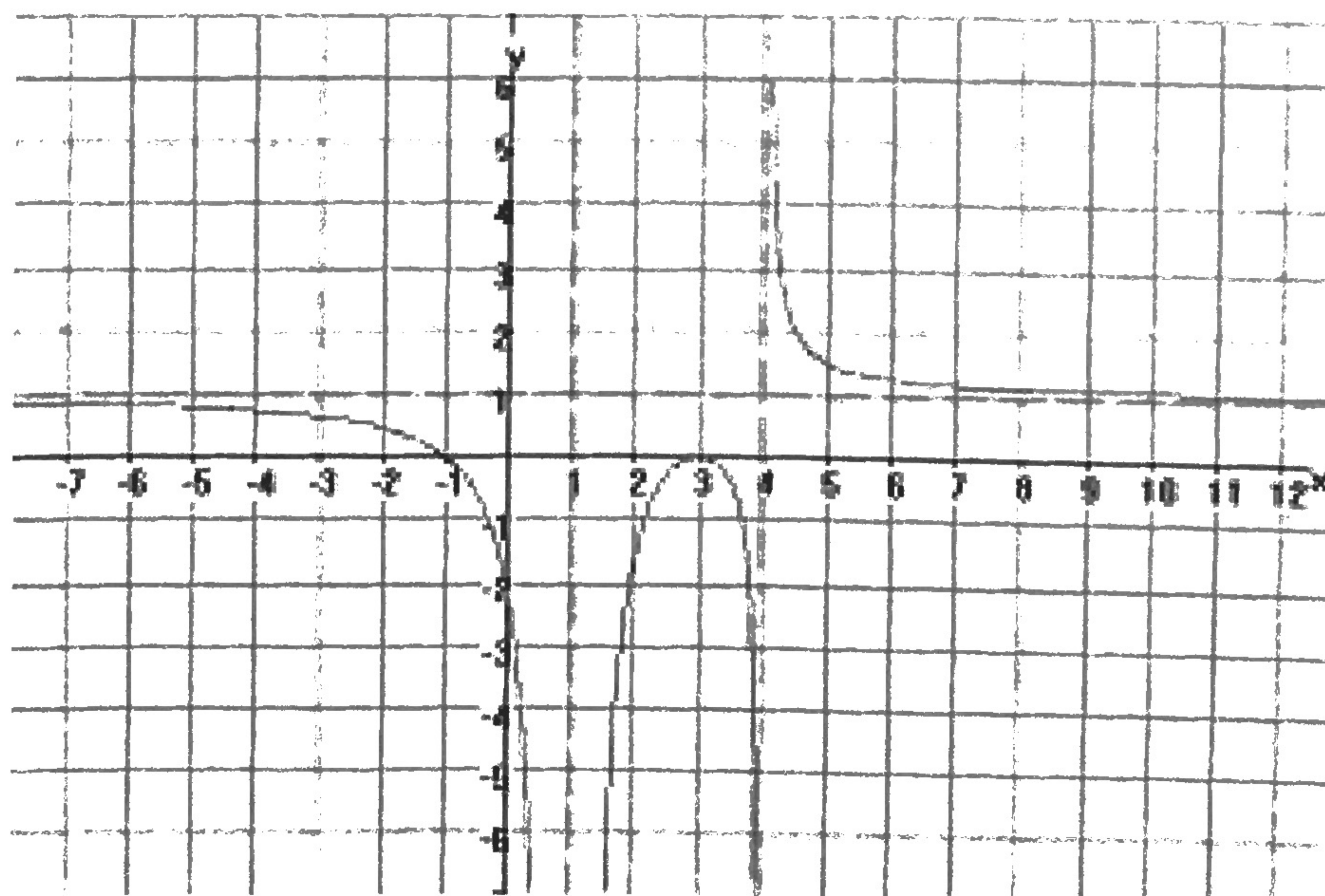
7. Write the equations of THREE graphs given, in factored form.



c.



d.

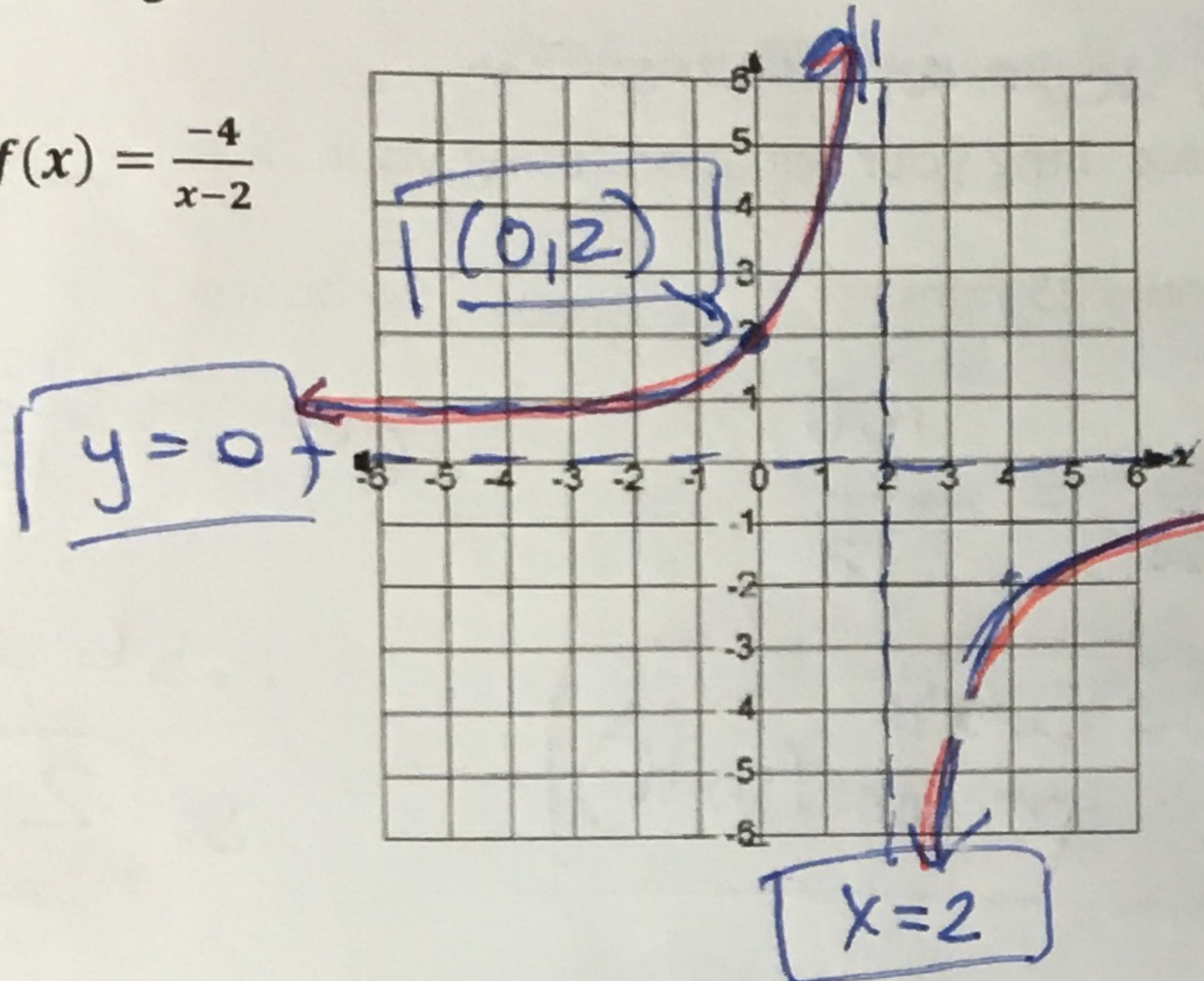


5AB Rational Functions & Equations

Practice Quest

1. Graph the function, including dotted lines for all asymptotes, closed circles for intercepts, open circles for holes, labeling all.

a. $f(x) = \frac{-4}{x-2}$



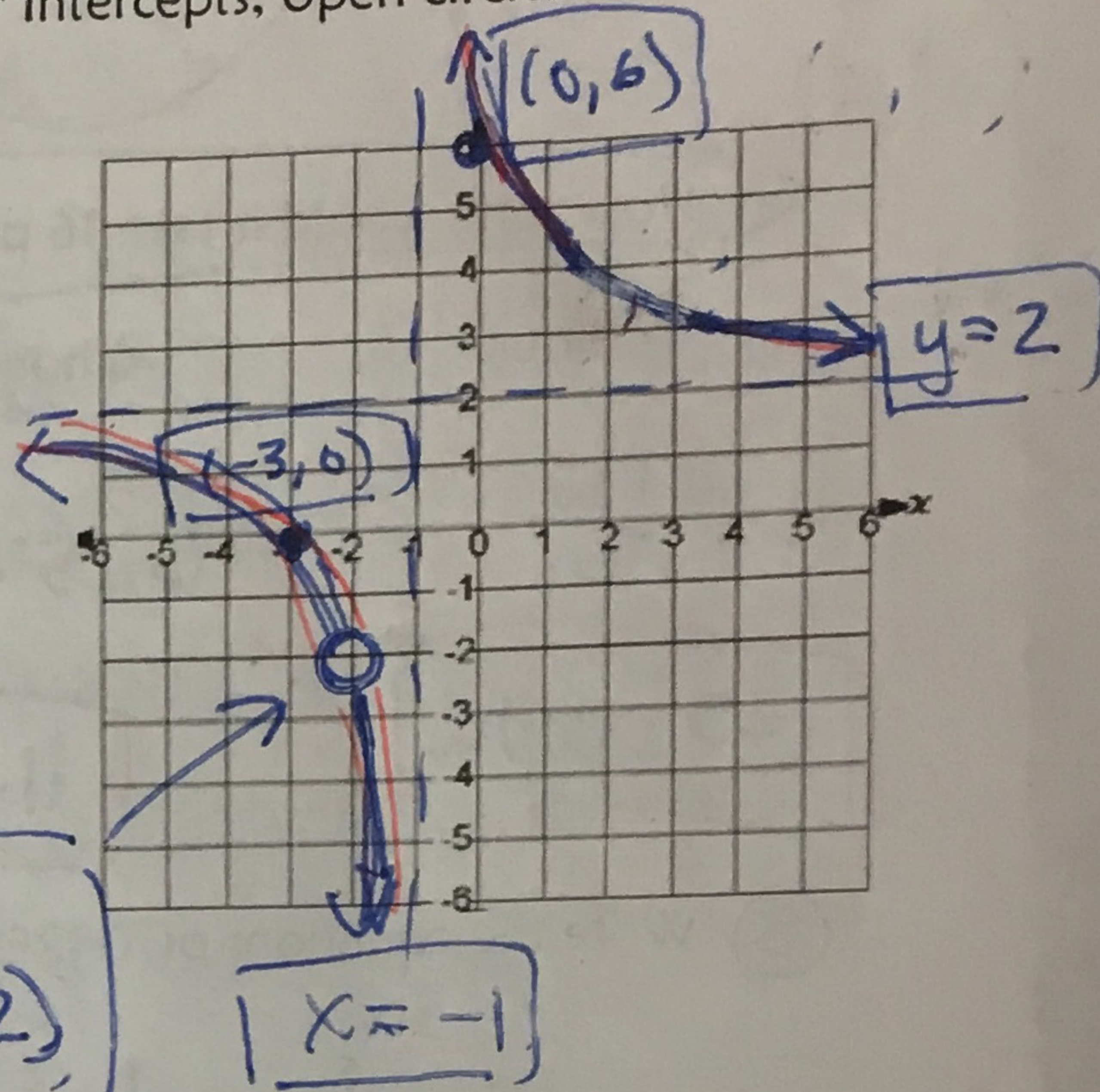
b. $g(x) = \frac{2x^2 + 10x + 12}{x^2 + 3x + 2}$

$$\frac{2(x^2 + 5x + 6)}{(x+2)(x+1)}$$

$$\frac{2(x+3)(x+2)}{(x+2)(x+1)}$$

$$\frac{2(x+3)}{(x+1)}$$

hole $(-2, -2)$



2. Write the equation of any asymptotes or coordinates of any removable discontinuities:

a. $f(x) = \frac{x^2 + 8x - 20}{x-1}$

$$\begin{array}{r} 1 \ 8 \ -20 \\ | \ 1 \ 1 \\ \hline 1 \ 9 \end{array}$$

VA: $x=1$
 OA: $y=x+9$

b. $f(x) = \frac{2x^2 - 4x + 8}{3x^2 - 27}$

$$\frac{2(x^2 - 2x + 4)}{3(x-3)(x+3)}$$

HA: $y = 2/3$
 VA: $x = -3, x = 3$

3. Find the coordinate(s) of the point(s) of intersection of $f(x) = \frac{x}{x+3}$ and $g(x) = \frac{8}{x+6}$ $x \neq -3, -6$

$$\frac{x}{x+3} = \frac{8}{x+6}$$

$$8(x+3) = x(x+6)$$

$$8x + 24 = x^2 + 6x$$

$$x^2 - 2x - 24$$

$$(x-6)(x+4)$$

$$x=6, -4$$

Points of int:
 $(6, \frac{2}{3})$ and $(-4, 4)$

4. What is the solution of the equation $\frac{2m^2 + 3m - 5}{m^2 + 4m - 5} = 4$?

Method 1:

$$\frac{(2m+5)(m-1)}{(m+5)(m-1)} = 4$$

$$2m+5 = 4(m+5)$$

$$2m+5 = 4m+20$$

$$2m = -15$$

$$m = \frac{-15}{2}$$

Method 2:

$$2m^2 + 3m - 5 = 4(m^2 + 4m - 5)$$

$$2m^2 + 3m - 5 = 4m^2 + 16m - 20$$

$$2m^2 + 13m - 15 = 0$$

$$(2m+15)(\frac{2m-2}{2})$$

$$m = \frac{-15}{2}$$

$$(2m+15)(m-1)$$

ext.

$$\begin{array}{r} 30 \\ 2 \ 15 \\ \hline 6 \ 5 \end{array}$$

5. It takes 5 people 20 hours to build a small hut for the homeless. $h(p) = \frac{k}{p}$, $h = \# \text{ hours}$ and $p = \# \text{ people}$.

a. Solve for the constant (k) using the information.

$$h = \frac{k}{p} \quad \checkmark \quad 20 = \frac{k}{5} \quad \boxed{k = 100}$$

6. $h = \frac{100}{16} = \boxed{6.25 \text{ hours}}$

7. ~~separate question.~~

6. How long would it take 16 people to build the hut? Evaluate using your equation, using your "k"

i. 4 hours

ii. 6 hours 15 minutes

iii. 6 hours 25 minutes

iv. 64 hours

$$4 = \frac{100}{p}$$

$$6.25 = \frac{100}{p}$$

$$6 + \frac{25}{60} = \frac{100}{p}$$

$$64 = \frac{100}{p}$$

$\boxed{25 \text{ people}}$

$\boxed{16 \text{ people}}$

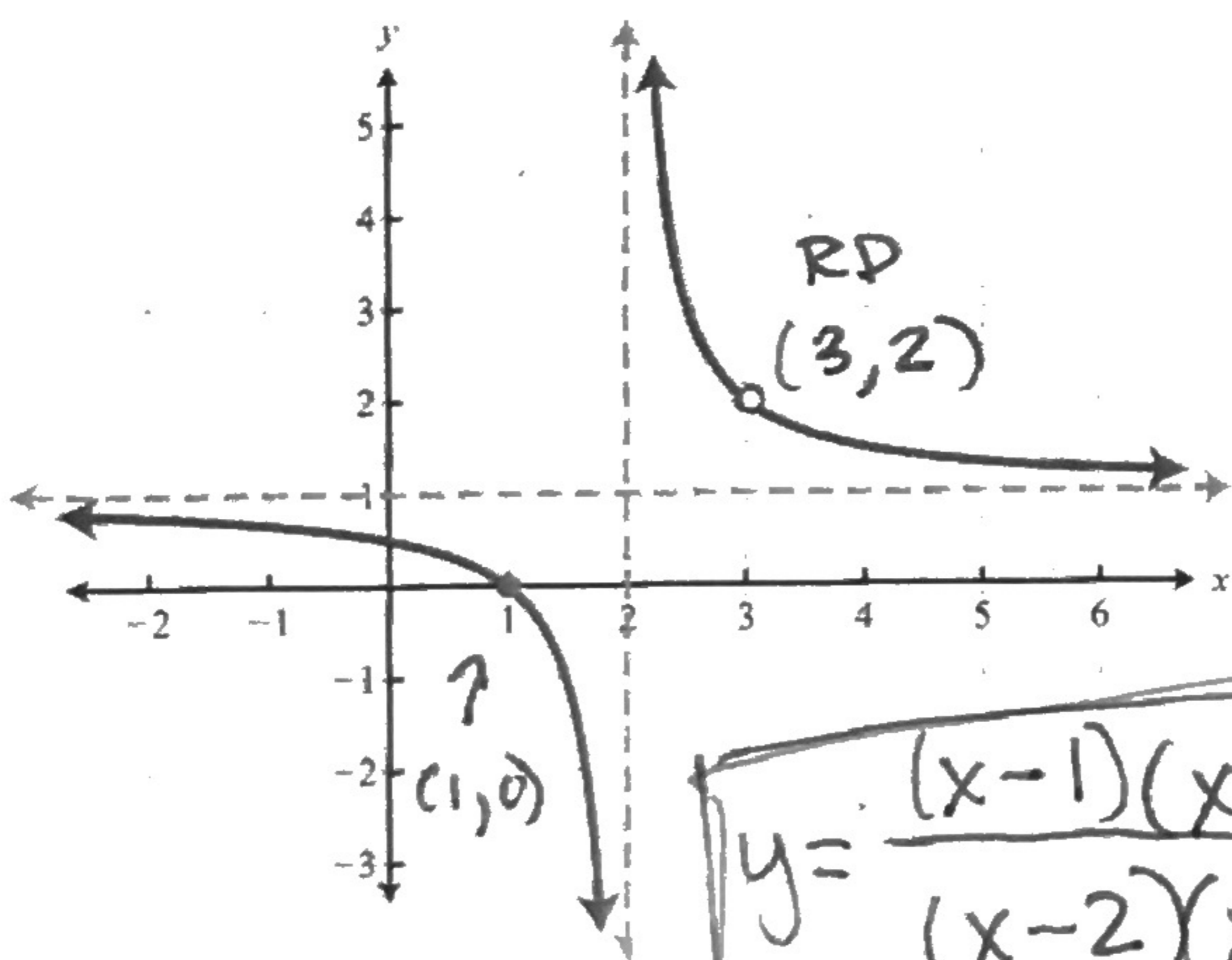
$p = 15.58$
 people (so 16)

1.56 people

so $\boxed{2 \text{ people}}$

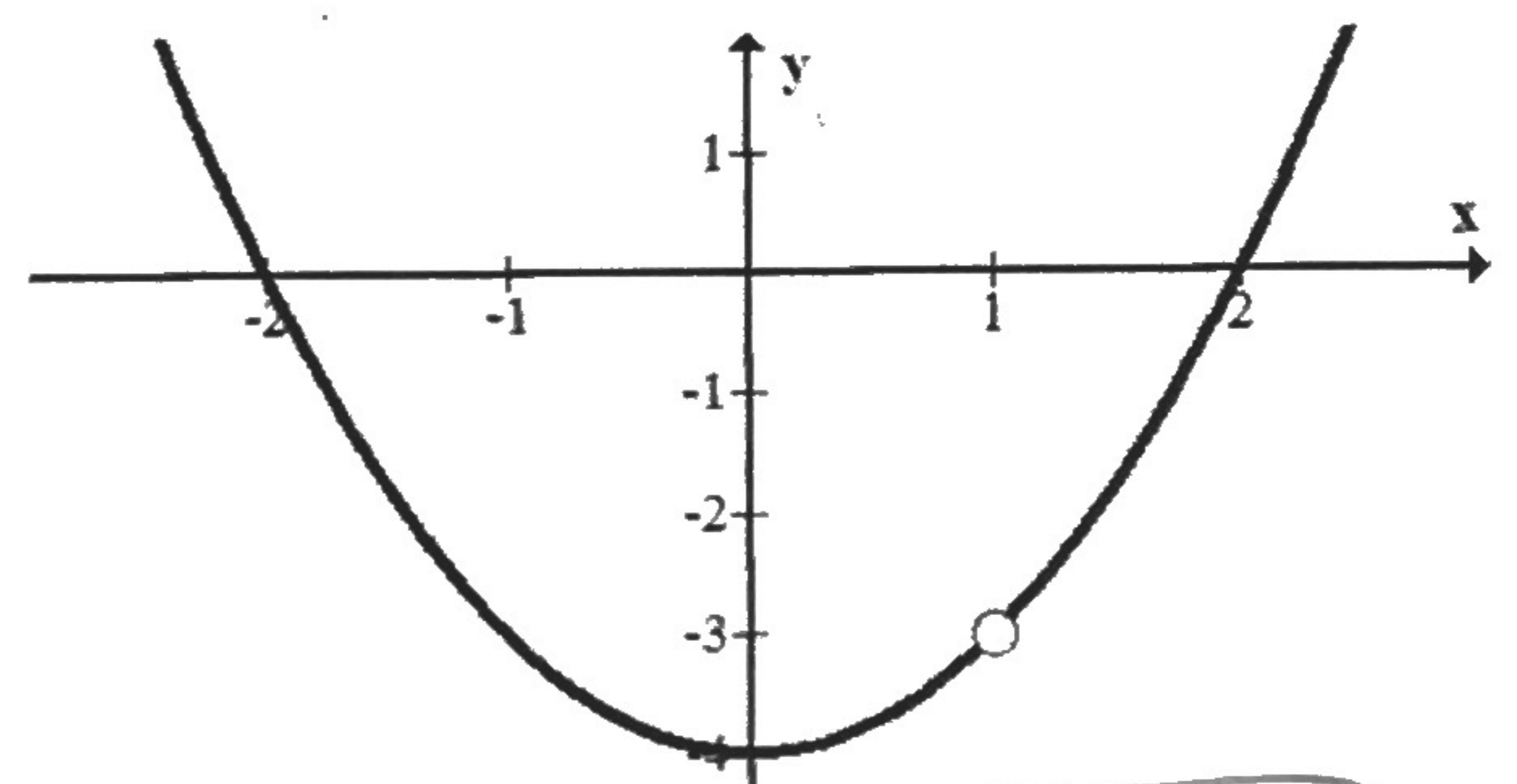
8. Write the equations of THREE graphs given, in factored form.

a.



$$y = \frac{(x-1)(x-3)}{(x-2)(x-3)}$$

b.

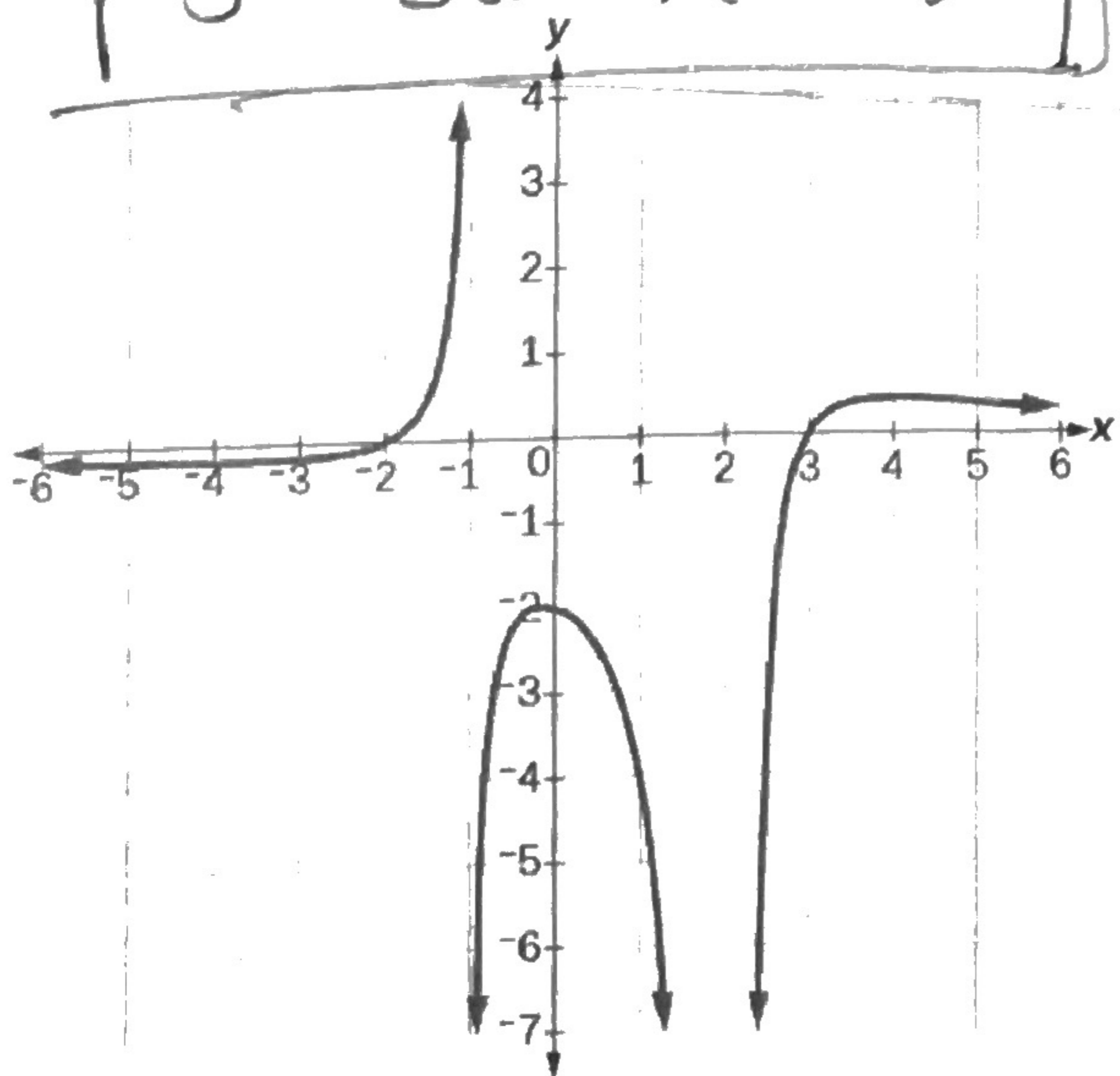


$$y = \frac{(x+2)(x-2)(x-1)}{(x-1)}$$

$$f(3) = \frac{2}{1} \checkmark$$

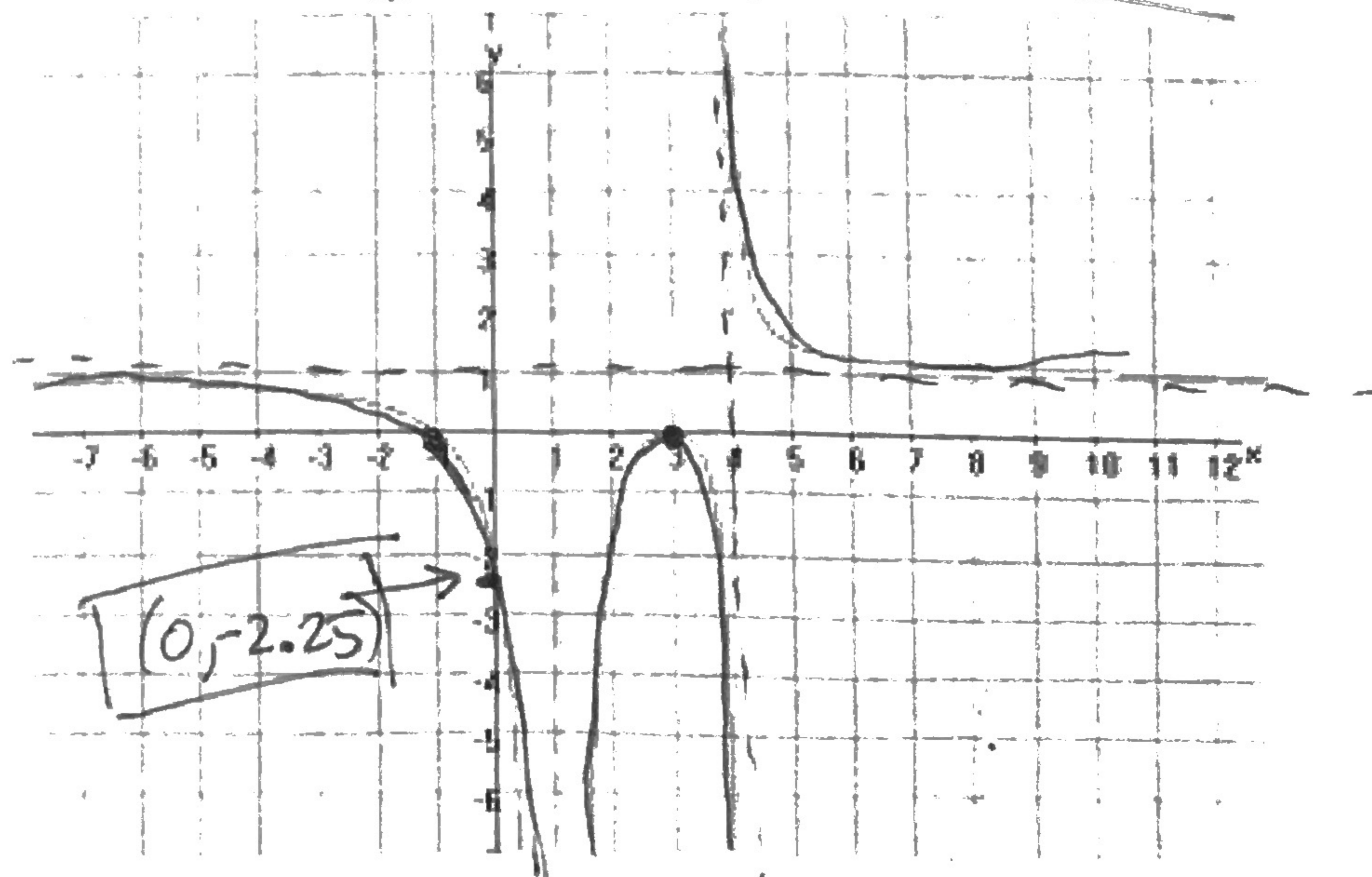
c.

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



d.

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



$\boxed{(0, -2.25)}$

$$\frac{-6}{4}a = -2 \quad \frac{-6a}{76} = \frac{-8}{-6} \quad a = \frac{4}{3}$$