

## Chapter 3 Test

BLM 3-10

1. Sketch a graph of each function.

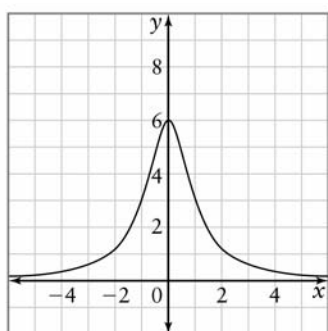
a)  $f(x) = -\frac{1}{x-4}$

b)  $g(x) = \frac{2x-3}{x+1}$

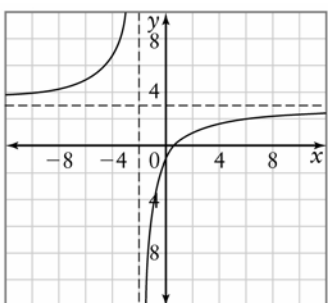
c)  $h(x) = \frac{30}{x^2 - 7x + 10}$

2. Write a possible equation for the function in each graph.

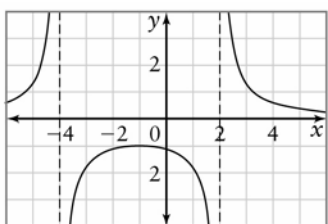
a)



b)



c)



3. For the function whose graph is shown in question 2, part c), state the following:

- a) the domain and range  
 b) the intervals over which the function is increasing  
 c) the intervals over which the slope of the graph is decreasing

4. Solve. Check your answer.

$$\frac{x-2}{3x-1} = \frac{2}{x+1}$$

5. Solve. Illustrate your answer on a number line.

$$\frac{x+3}{(x-2)(x+4)} > 0$$

6. The distance of an image from a lens in a camera can be modelled by the function

$$D = \frac{5d}{d-5}, \text{ where } D \text{ is the distance from}$$

the lens to the image and  $d$  is the distance from the subject being photographed to the lens. Both  $D$  and  $d$  are measured in centimetres. In order for a photograph to be in perfect focus, the distance from the lens to the sensor must be the same as the distance of the lens to the image. The distance of the lens from the sensor can be adjusted to allow this to happen.

- a) Sketch a graph of the function.  
 b) Suppose the maximum distance from the lens to the sensor is 9 cm. How far away from the lens is the subject in this case?  
 c) How far should the lens be from the sensor in order to have a distant subject in focus?  
 d) **Use Technology** Use technology to determine the values of  $d$  for which the distance of the lens to the sensor can be less than 6.5 cm.