LG 16 Ver B

Name: _____ Student #:_____

Date:_____ T.A. #:_____

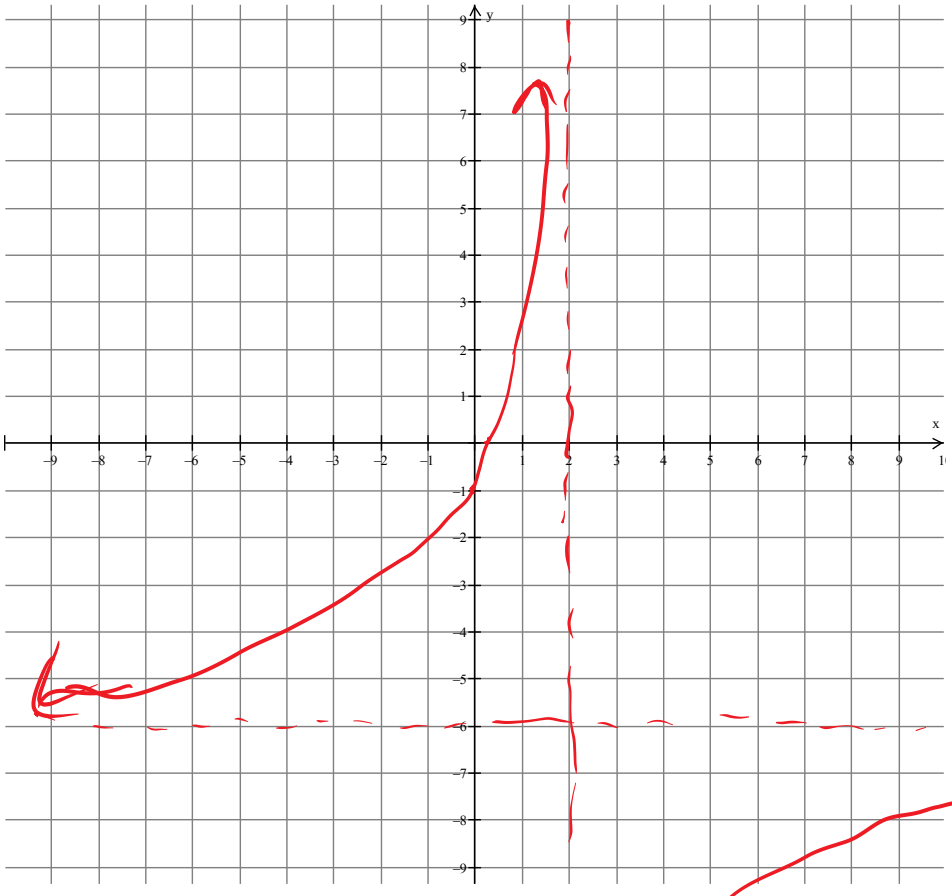
Mathematics 12 Pre-Calculus
LEARNING GUIDE 16 TEST – RATIONAL FUNCTIONS

/20

***Full marks will NOT be given for the final answer only.**

When using a calculator, you should provide a decimal answer that is correct **to at least two decimal places** (unless otherwise indicated). Such rounding should occur **only** in the final step of the solution.

1. Sketch the graph of $y = \frac{2-6x}{x-2}$ and determine the equations of any asymptotes and intercepts. (4 marks)



/4

2. Create a rational function with asymptotes at x = -2 and y = 4. (2 marks)

$f(x) = \frac{4x + c}{x+2}$ ← could be a constant.

3. For the function $f(x) = \frac{x^2-16}{x^2+7x+12}$:

a) Determine the values of x where an asymptote occurs. (1 mark)

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

$x = -3$ asymptote

b) Determine the values of x where a point of discontinuity exists. (1 mark)

$x = -4$

c) Determine the x and y intercepts of the function (2 marks)

x int: 4

y int $-\frac{4}{3}$

/6

4. Solve the following equation algebraically. (3 marks)

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

$2(x+3) = x^2 - x(x+3)$

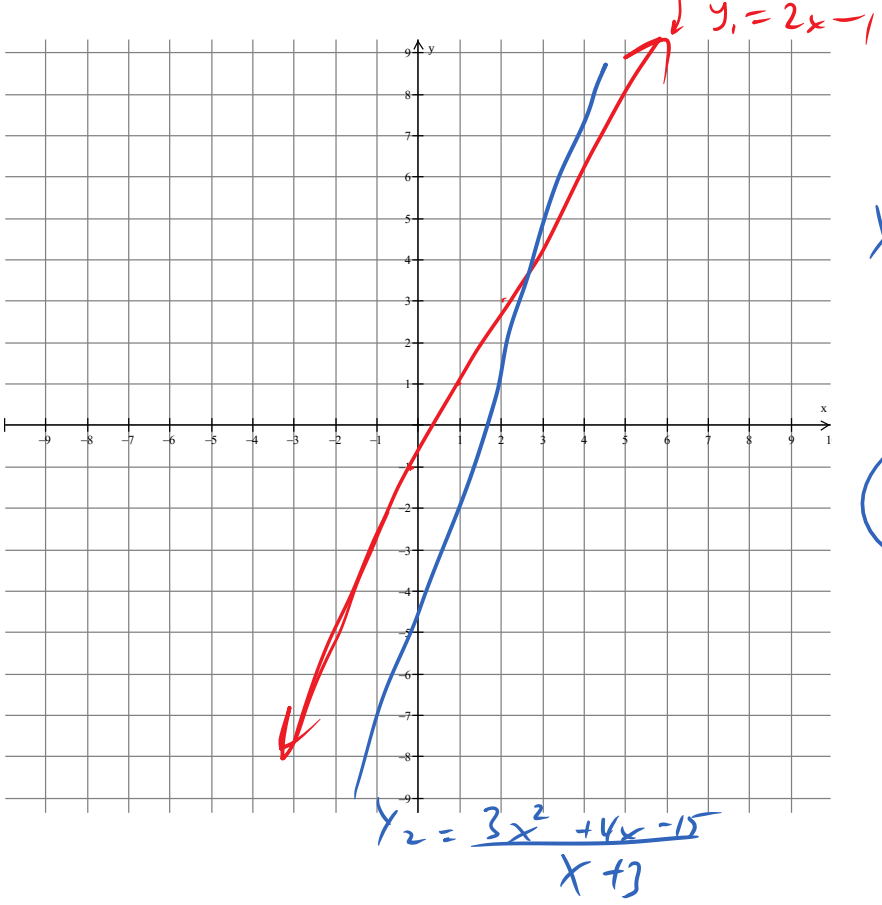
$2x + 6 = x^2 - x^2 - 3x$

$5x = -6$

$x = \frac{-6}{5}$

5. Solve the following equation graphically. (3 marks)

$$\frac{3x^2 + 4x - 15}{x+3} = 2x - 1$$



X COORD OF INTERSECTION IS SOLUTION

$x = 4$

/6

6. A ski club charters a bus for a ski trip at a cost of $480. In an attempt to lower the bus fare per skier, the club invites non-members to go along. After five non-members join the trip, the fare per skier decreases by $4.80. How many club members are going on the trip? (4 marks)

n = # of club members.

$$\frac{480}{n} - \frac{480}{n+5} = 4.8$$

$$480(n+5) - 480n = 4.8n(n+5)$$

$$480n + 2400 - 480n = 4.8n^2 + 24n$$

$$4.8n^2 + 24n - 2400 = 0$$

$$n = 20, -25$$

$$n = 20$$

THERE ARE 20 MEMBERS GOING.

/4