UNIT 10 Rational Expressions and Equations

REVIEW

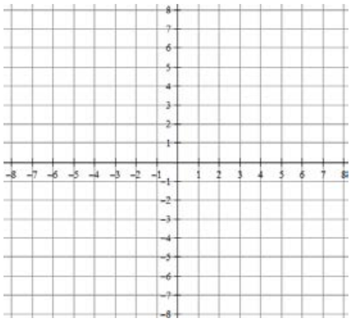
NAME:__________________________

DATE:_______________

Find all asymptotes and intercepts. Mark them on the graph. Use the graphing calculator to sketch the function.

1.

$$f(x) = \frac{x^2 - x}{-3x + 9}$$



VA:

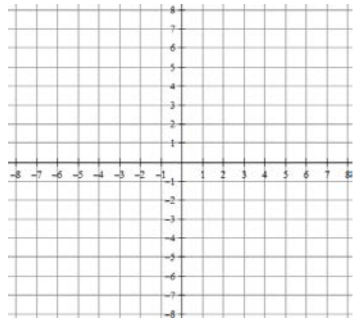
HA:

x-int:

y-int:

2.

$$f(x) = \frac{x^2 + x - 6}{x^2 + x - 2}$$



VA:

HA:

x-int:

y-int:

Simplify. State the excluded values when asked.

3. $\frac{6r^3+42r}{r+7} \cdot \frac{1}{9r^2}$

4. $\dfrac{\frac{x-2}{4} - \frac{1}{x}}{\frac{16}{x^2}}$

5. $\frac{n^2-16}{n^2-5n+4}$

Excluded values:

6. $\frac{9}{9(x-6)} \div \frac{x-7}{(x-10)(x-7)}$

Perform the indicated operation.

7.

$$\frac{4x - 2}{6x + 30} - \frac{x - 4}{6x + 30} =$$

8.

$$\frac{v - 5}{3v + 3} + \frac{v - 1}{3} =$$

Solve each equation. Check for extraneous solutions.

9.	10.
$$\frac{5x}{x-2} = 7 + \frac{10}{x-2}$$	$$\frac{1}{2n+4} - \frac{1}{2} = \frac{3}{n+2}$$

APPLICATION

11. Mr. Kelly starts a cell phone company called Kelly's Cellys. It cost him $26,000 to set up the equipment plus $28 dollars for each phone produced. The following rational function determines the average cost for each phone made.

$$\bar{C}(x) = \frac{26000 + 28x}{x}$$

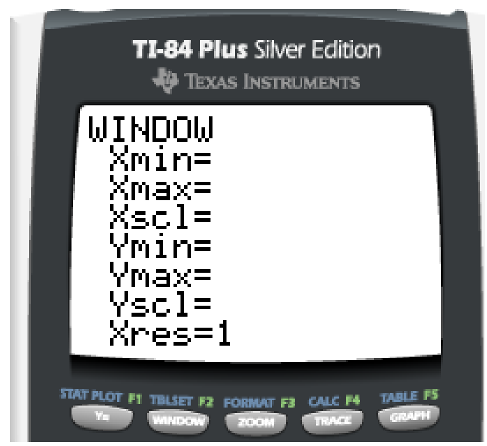
a. Graph on your calculator with a friendly window. Fill in in the window below.
NOTE: The window needs to show up to 2000 cell phones

b. State any excluded values.

c. Find $\bar{C}(1000)$. What does it mean?

d. What does $\bar{C}(x) = 80$ mean?

e. Find the Horizontal Asymptote. What does it mean?



12. **GOING UP?** Mr. Sullivan is shopping at the Medina Mall. He leaves The Body Shop and heads down the escalator. After riding down 12 feet, Sully remembers that he left the bottle of Aroma Therapy Exfoliator Hand Lotion For Sensitive Skin that he just bought at The Body Shop. He turns around and runs up the escalator to retrieve his exfoliator. The equation below represents the total time T (in seconds) of his trip down and up the escalator.

$$T = \frac{12}{s} + \frac{12}{w - s}$$

where s is the speed of the escalator,
and w is Sully's average walking speed.

Escalator for 6 stairs? What?!

a. Simplify the right side of the equation.

b. Find the total time if Sully walks 6 ft/sec and the escalator's speed is 4 ft/sec.