Name: _____ Date: _____ Period: _____

Secondary Math 3 Honors Rational Functions Test Review

Simplify each rational expression fully and state what the excluded values are.

1. $\dfrac{3-2r-r^2}{r^2-10r+9}$

2. $\dfrac{5n^2+15n}{9n^2+27n}$

Add or subtract each rational expression. Fully simplify your answer.

3. $\dfrac{6x}{x+4}-\dfrac{3}{x+2}$

4. $\dfrac{3}{6a}-\dfrac{a-2}{a+4}$

Multiply or divide each rational expression. Fully simplify your answer.

5. $\dfrac{x^2-11x+30}{x-5}\cdot\dfrac{6x}{8}$

6. $\dfrac{1}{n-9}\div\dfrac{n-9}{n^2-17n+72}$

Solve each equation. Remember to check for extraneous solutions.

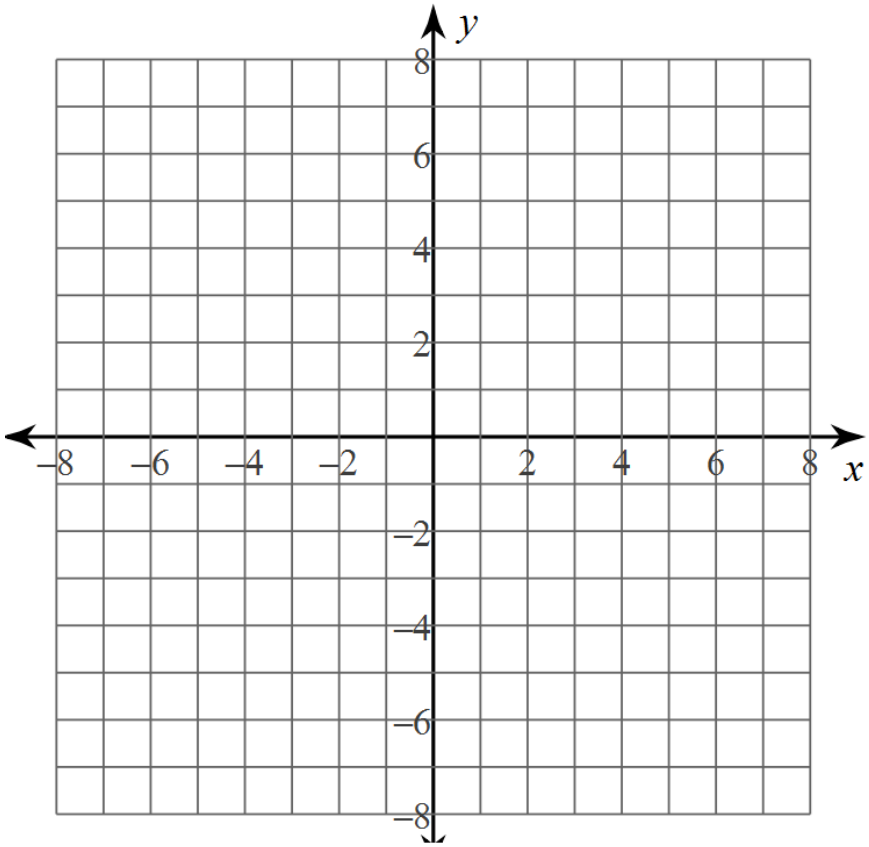
7. $\frac{1}{3r} + \frac{r+3}{3r} = \frac{1}{r}$

8. $\frac{3}{k^2 - 5k} + \frac{6}{k} = \frac{1}{k-5}$

Graph each rational function below. Write out or label any vertical, horizontal, or slant asymptotes; any x- and y-intercepts; holes. If there aren't any of what's asked for above, write "none."

9.

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



Horizontal Asymptote(s): _____

Vertical Asymptote(s): _____

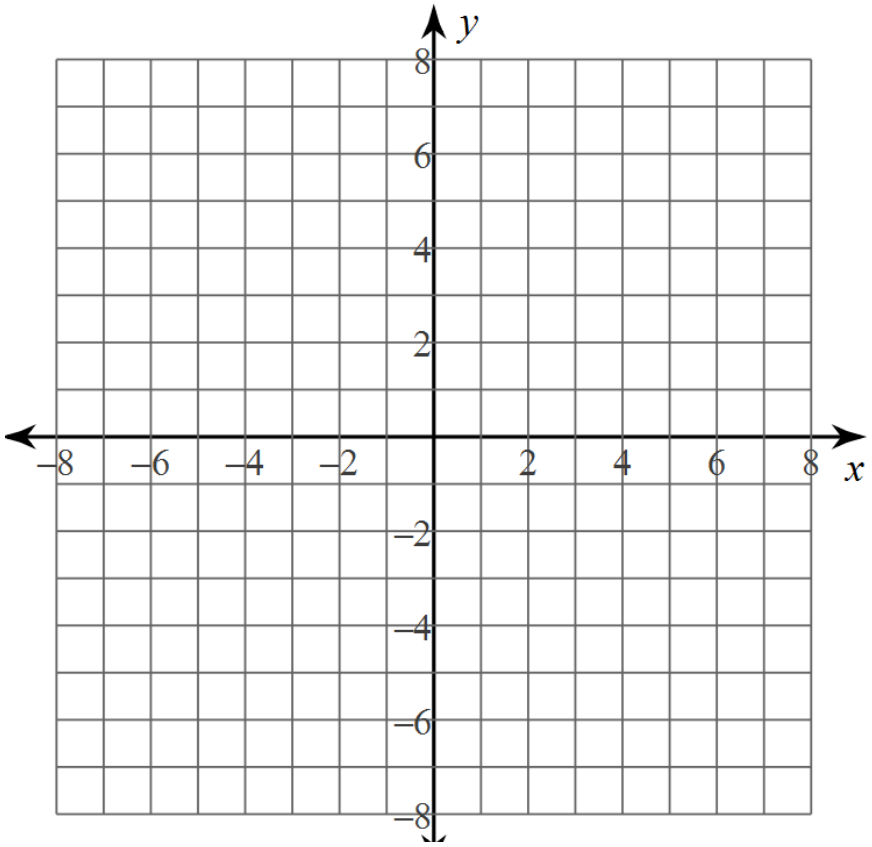
Slant Asymptote(s): _____

x-intercept(s): _____

y-intercept(s): _____

Hole(s): _____

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



Horizontal Asymptotes: _____

Vertical Asymptotes: _____

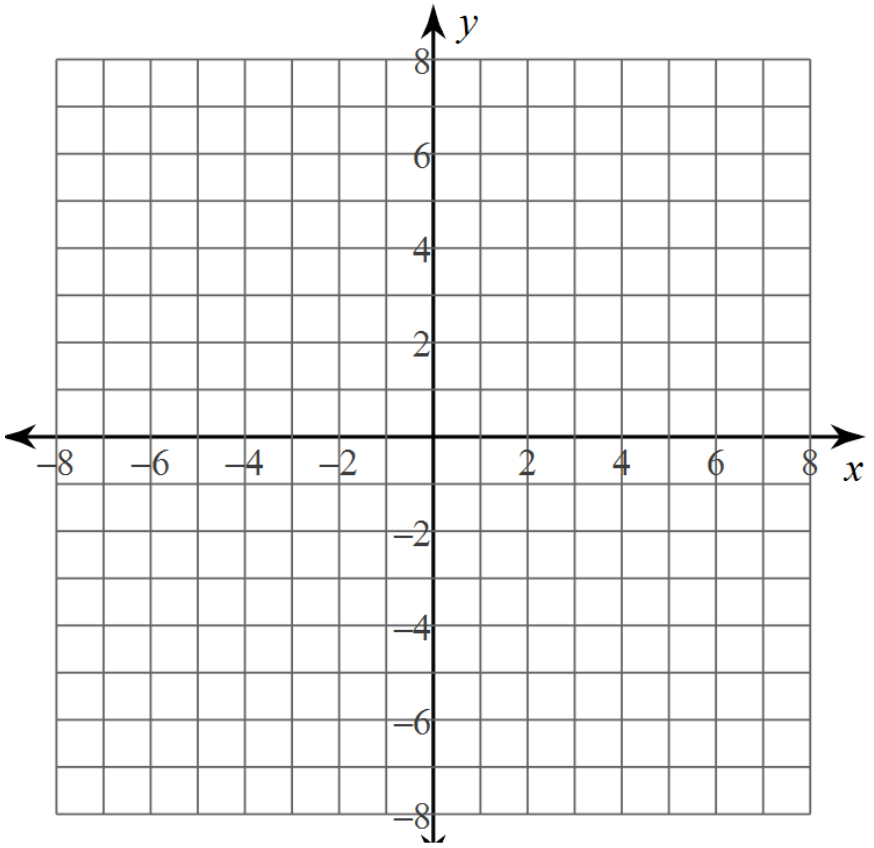
Slant Asymptotes: _____

x-intercept: _____

y-intercept: _____

Holes: _____

11. $$f(x)=\frac{x^2-16}{-2x^2-2x+24}$$



Horizontal Asymptote(s): _____

Vertical Asymptote(s): _____

Slant Asymptote(s): _____

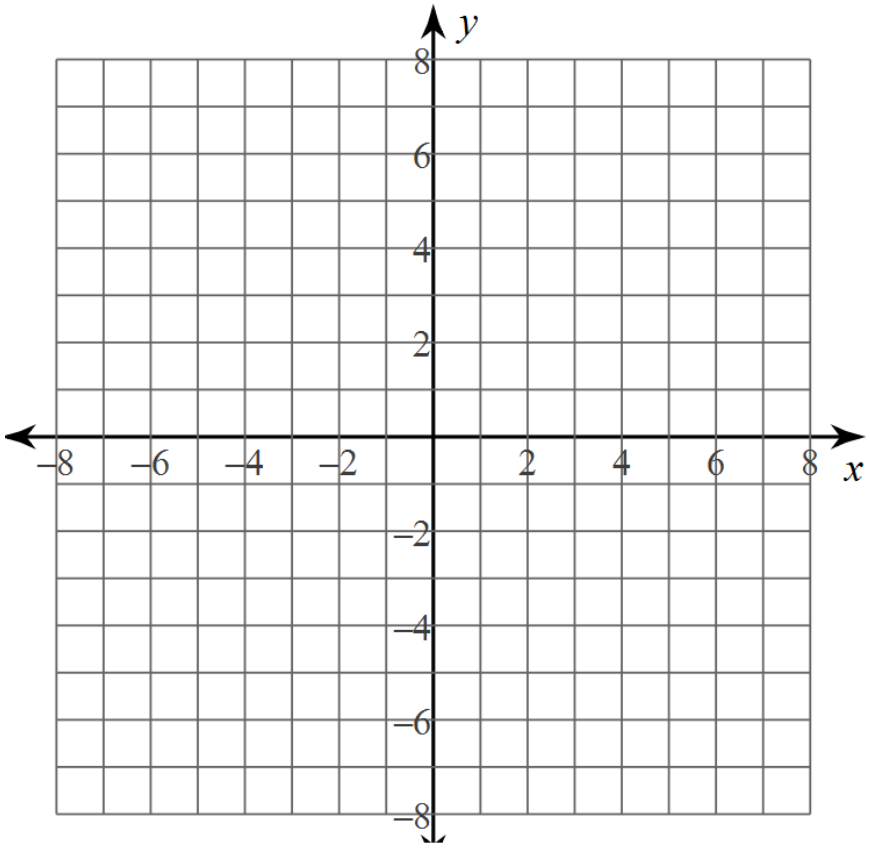
x-intercept(s): _____

y-intercept(s): _____

Hole(s): _____

12.

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



Horizontal Asymptote(s): _____

Vertical Asymptote(s): _____

Slant Asymptote(s): _____

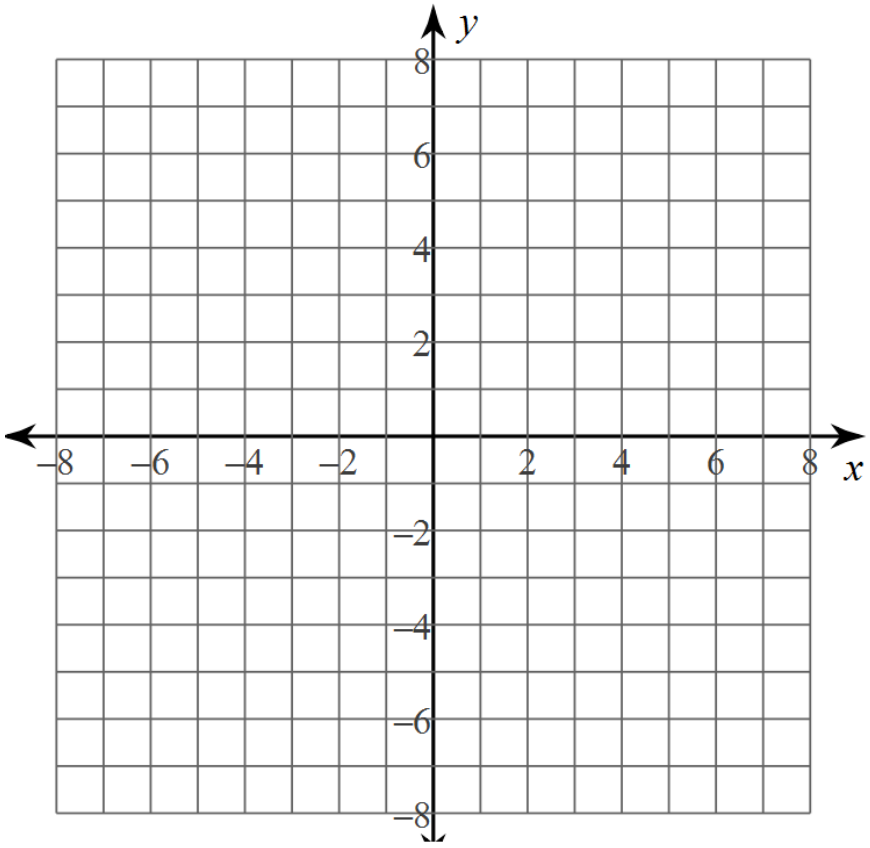
x-intercept(s): _____

y-intercept(s): _____

Hole(s): _____

****No calculator below. State the asymptotes, intercepts, and holes. Sketch a graph of the following.**

$$f(x) = \frac{x^2 - 6x + 8}{4x - 12}$$



Horizontal Asymptote(s): _____

Vertical Asymptote(s): _____

Slant Asymptote(s): _____

x-intercept(s): _____

y-intercept(s): _____

Hole(s): _____