Math 3 Name_____ ID: 1

Unit 6 Review 1

Date_____ Period____

Simplify each expression.

1) $\frac{24m}{18m^3}$

2) $\frac{5x-25}{x^2-11x+30}$

3) $\frac{r+5}{r^2+4r-12} \cdot \frac{7r-14}{7}$

4) $\frac{n^2+8n+7}{9-n} \cdot \frac{n-9}{5n+35}$

5) $\frac{5x^3-5x^2}{2x^2} \div \frac{x-1}{6}$

6) $\frac{x+4}{x^2-4x-32} \div \frac{9}{2x^2-16x}$

7) $\frac{\frac{x+4}{15}}{\frac{9}{25}}$

8) $\frac{\frac{1}{5}}{\frac{x+3}{5}+\frac{x-5}{x+3}}$

9) $\frac{4x}{4x^2y}+\frac{5x}{2y}$

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

11) $\frac{3x}{2x}-\frac{5x+1}{2(x-2)}$

12) $\frac{a+4}{a^2+10a+24}-6a$

Solve each equation. Remember to check for extraneous solutions.

13) $\frac{4}{3n}=\frac{1}{n^2}+\frac{7n-35}{n^2}$

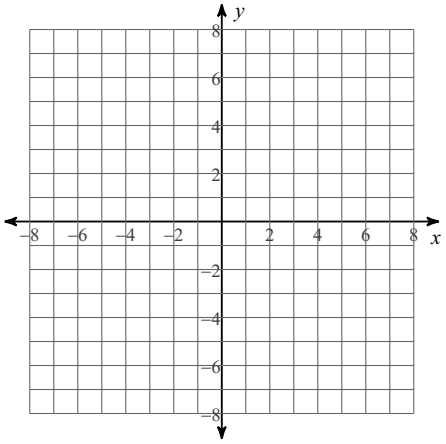
14) $\frac{x-2}{x^2-5x}-\frac{1}{2x-10}=\frac{x+4}{x^2-5x}$

15) $\frac{3}{p^2+9p+18}=\frac{p-4}{p+6}-\frac{p}{p^2+9p+18}$

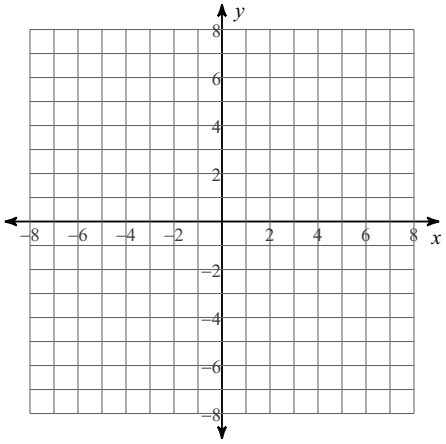
16) $\frac{1}{3a-6}-\frac{a-3}{a^2-2a}=\frac{a+6}{3a-6}$

Identify the holes, vertical asymptotes, x-intercepts, and horizontal asymptote of each. Then sketch the graph.

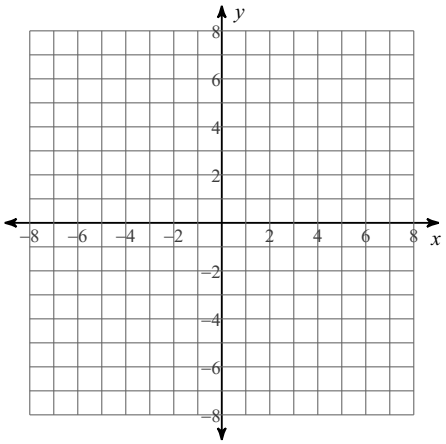
17) $f(x) = \dfrac{4x + 4}{x^2 + 3x + 2}$



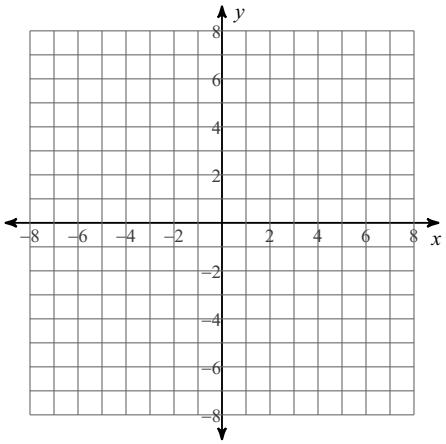
18) $f(x) = \dfrac{x^2 + 2x - 8}{x^2 - 2x - 3}$



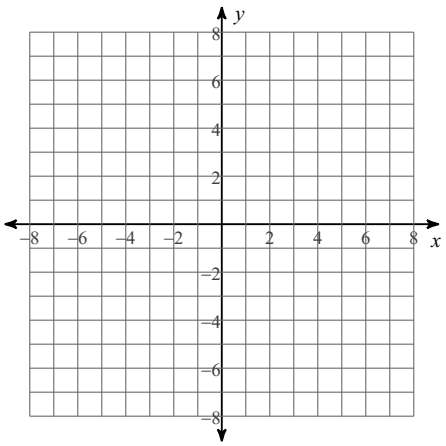
19) $f(x) = \dfrac{-3x + 12}{x - 3}$



20) $f(x) = \dfrac{3x^2 + 9x}{x^2 + 2x}$

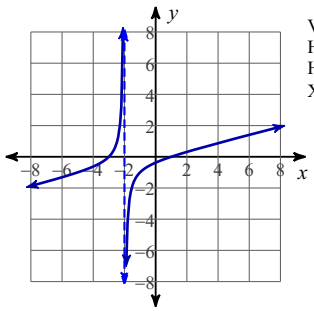


21) $f(x) = \dfrac{-x^3 + x}{x^3 - 4x}$



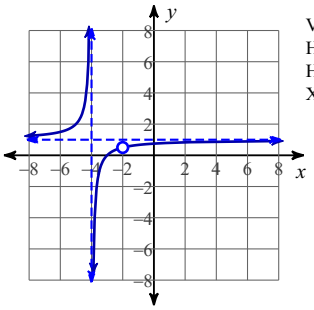
22) $f(x) = \dfrac{x^2 + 6x + 8}{x^2 + 5x + 6}$

A)



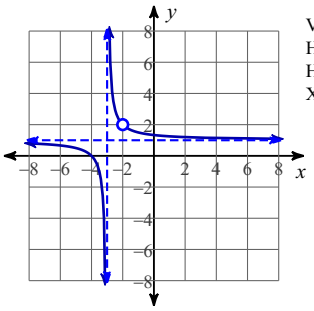
Vertical Asym.: $x = -2$
Holes: None
Horz. Asym.: None
X-intercepts: 1, –3

B)



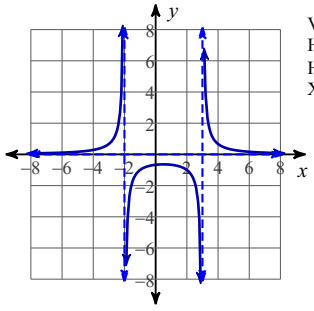
Vertical Asym.: $x = -4$
Holes: $x = -2$
Horz. Asym.: $y = 1$
X-intercepts: –3

C)



Vertical Asym.: $x = -3$
Holes: $x = -2$
Horz. Asym.: $y = 1$
X-intercepts: –4

D)



Vertical Asym.: $x = 3$, $x = -2$
Holes: None
Horz. Asym.: $y = 0$
X-intercepts: None

Simplify each expression.

23) $\dfrac{5x}{x^2 - 8x + 15} + \dfrac{4}{2x}$

Solve each equation. Remember to check for extraneous solutions.

24) $\frac{b^2 + 6b + 9}{b + 6} - \frac{b - 3}{b + 6} = b + 3$