Name:

MATH 3 Final Review Unit 4: Rational Functions

Perform the indicated operations. Simplify the result.

1. $\dfrac{x^2+8x-20}{5x^3+50x^2} \div \dfrac{x^2+9x}{x^2+7x-18}$

2. $\dfrac{(x+2)^2}{x-5} \cdot \dfrac{x^2-2x}{x^2-4}$

3. $\dfrac{x^2-25}{x+8} \div (x-5)$

4. $\dfrac{5}{3(x+2)} + \dfrac{7}{3(x+2)}$

5. $\dfrac{4x}{x^2-9} + \dfrac{2}{x+3} - \dfrac{2}{x-3}$

6. $\dfrac{x^2+11x+30}{x^2-25} \div \dfrac{x+6}{x-6}$

7. $\dfrac{3x+4}{x^2-16} - \dfrac{2}{x-4}$

8. $\dfrac{x^2+4x}{x^2-6x+8} \cdot \dfrac{x^2-x-2}{3x^3+12x^2}$

9. $\dfrac{x^2+7x+12}{x^2-9} \div \dfrac{x+4}{x-4}$

Simplify the complex fraction.

10. $\dfrac{\dfrac{2}{x-6}}{\dfrac{3}{x}+5}$

11. $\dfrac{\dfrac{4}{x-3}+\dfrac{2}{3}}{\dfrac{5}{x-3}}$

Solve the equation. Check for extraneous solutions.

12. $\dfrac{4}{j-1}-\dfrac{1}{j-3}=0$

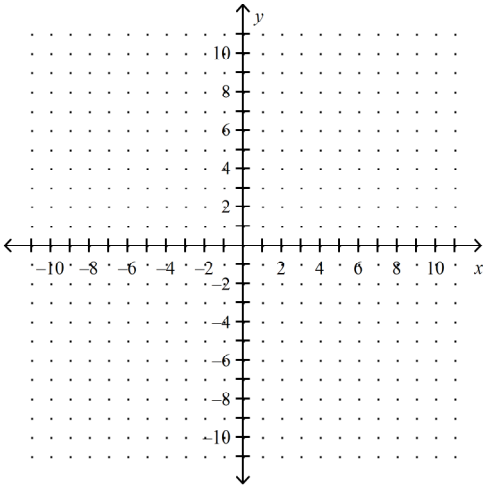
13. $\dfrac{1}{a^2-9}=\dfrac{1}{a+3}$

14. $\dfrac{x-7}{x+9}=\dfrac{x+1}{x-4}$

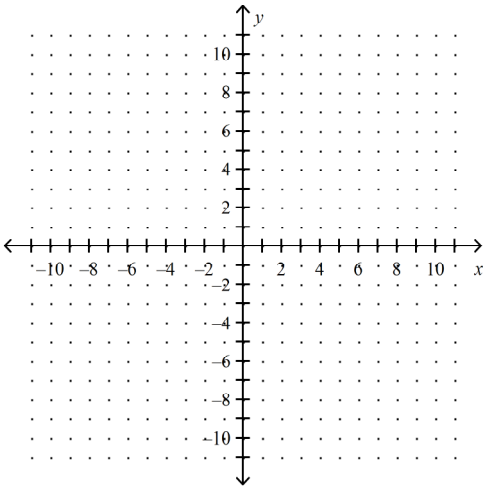
15. $\dfrac{k}{k+1}+\dfrac{1}{k-1}=\dfrac{4k-3}{(k+1)(k-1)}$

Sketch the graph of the function. Include any vertical or horizontal asymptotes.

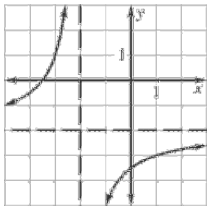
16. $y=\dfrac{-3}{x+2}-2$



17. $y=\dfrac{5}{x+2}$



MATH 3 Final Review Unit 4: Rational Functions
Answer Section

1. $\frac{(x-2)^2}{5x^3}$
2. $\frac{x(x+2)}{x-5}$
3. $\frac{x+5}{x+8}$
4. $\frac{4}{x+2}$
5. $\frac{4}{x+3}$
6. $\frac{x-6}{x-5}$
7. $\frac{1}{x+4}$
8. $\frac{x+1}{3x(x-4)}$
9. $\frac{x-4}{x-3}$
10. $\frac{2x}{5x^2-27x-18}$
11. $\frac{2(x+3)}{15}$
12. $\frac{11}{3}$
13. 4
14. $\frac{19}{21}$
15. 2
16. 

17.