Algebra 2 Unit 5 Review

SHOW ALL WORK on a separate piece of paper

Graph each function. Identify the domain, range, intercepts, vertical and horizontal asymptotes, and end behavior.

1. $y = \frac{5}{x+2}$

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

Write in $f(x) = \frac{a}{x-h} + k$ form.

3. $y = \frac{8x-4}{2x-5}$

4. $y = \frac{6x}{3x-1}$

Perform the indicated operation(s) and simplify.

5. $\frac{2x-3}{(x+3)^2} \cdot \frac{x^2+4x+3}{4x^2-9}$

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

7. $\frac{(x+7)}{x^2+5x-14} \div \frac{x^2+x-6}{x+3}$

8. $\frac{3x-5}{x^2-25} - \frac{2}{x+5}$

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

10. $\frac{6x+5}{2x+6} - \frac{2x-7}{2x+6}$

11. $\frac{x^3-3x^2}{3x+6} \div \frac{x^3-8x^2+15x}{6x^2-18x-60}$

12. $\frac{x^3+27}{x^2+7x+12} \div \frac{x+3}{x^2+8x+16} \cdot \frac{x^2-9}{x^2-3x+9}$

13. $\frac{x}{x^2-4} + \frac{2}{x^2-2x} - \frac{x+1}{x^2+2x}$

Simplify the complex fraction.

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

15. $\dfrac{\frac{1}{x} - \frac{1}{3x}}{\frac{3}{x} - \frac{1}{3x}}$

16. $\dfrac{\frac{2}{x} + \frac{3}{xy}}{\frac{3}{x^2} + \frac{1}{5}}$

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

Solve the equation. Check for extraneous solutions.

18. $\dfrac{x}{30}-\dfrac{1}{5x}=\dfrac{1}{6}$

19. $\dfrac{2x-9}{x-7}+\dfrac{x}{2}=\dfrac{5}{x-7}$

20. $\dfrac{3}{x-2}=\dfrac{4}{x-3}-\dfrac{6}{x^2-5x+6}$

21. $\dfrac{x^2+2x+2}{x-1}=\dfrac{2x+3}{x-1}$

22. $\dfrac{3}{x+1}+\dfrac{x-2}{3}=\dfrac{13}{3x+3}$

23. $\dfrac{3}{2x}-\dfrac{1}{x-5}=1$