

Work must be done on separate paper.

Simplify the fraction if possible.

1. $\frac{6x^4 - x^3}{2x^4}$

2. $\frac{x^2 - 3x - 4}{x^3 + 1}$

3. $\frac{2x^2 - 5x}{x^2 + 7x + 12}$

Multiply and Divide.

4. $\frac{x^2 - 2x}{x + 5} \cdot \frac{x^2 + 6x + 5}{3x}$

5. $\frac{x^2 + 2x - 15}{x^2 - 9} \cdot (x^2 - x - 12)$

6. $\frac{28x^4y}{y^7} \div \frac{y^9}{2x^5}$

Add or Subtract

7. $\frac{7}{2x^2} - \frac{4}{3x}$

8. $\frac{7}{x^2 - 5x - 24} + \frac{3}{x - 8}$

9. $\frac{7}{x - 5} + \frac{4x}{x + 1}$

Simplify the Complex Fraction

10. $\frac{\frac{x^2}{4} - \frac{4}{5}}{\frac{4}{5} - \frac{4}{x}}$

11. $\frac{\frac{x^2}{4}}{\frac{x}{x + 4}}$

12. $\frac{\frac{12}{x^2 - 7x - 44}}{\frac{2}{x - 11} + \frac{1}{x + 4}}$

Solve

13. $\frac{1}{2x+5} = \frac{x}{11x+20}$

14. $\frac{12}{x^2 - 2x} - \frac{3}{x - 2} = \frac{3}{x}$

15. $\frac{6}{x-3} = \frac{8x^2}{x^2-9} - \frac{4x}{x+3}$

Find the inverse.

16. $f(x) = \frac{12}{x} + 9$

17. $g(x) = \frac{x - 3}{x + 6}$

18. $h(x) = \frac{8}{x - 3}$

Graph by transformations.

19. $f(x) = \frac{2}{x} + 1$

20. $g(x) = -\frac{1}{x - 3}$

List the hole(s), and asymptotes.

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

22. $f(x) = \frac{x^2 - x - 12}{x - 4}$

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

Graph the function. Find the hole(s), asymptotes and intercepts.

24. $f(x) = \frac{-4(x^2 - 5x - 6)}{2(x^2 - 2x - 3)}$

25. $f(x) = \frac{x + 1}{x^2 - 1}$

Check your answers with the key!