

Cumulative Review #2

Perform the indicated operation. Write your answer in standard form.

1. $(x-2)(2x+3)$

2. $(x+1)(2x^2-3x+8)$

3. $(3x^2-4x+1)-(x^2+3x+9)$

4. $(2x^2+3x-8)(x^2-4x+2)$

5. $(4x^4+2x^2-4x-1)\div(x^2-x+2)$

6. $(6x^3-5x^2+2x+3)\div(x-1)$

Factor. Show all necessary work.

7. x^4-81

8. $8x^3+27y^3$

9. $125x^5 - 5xy^2$

10. $2x^2 + x - 6$

11. $64x^3 - 125$

12. $4x^3 - x^2 - 4x + 1$

13. Solve for the zeros of the function given $x - 3$ is a factor of $f(x) = x^3 - 4x^2 + x + 6$.

Simplify. State all excluded values.

14. $\frac{x^2 - 6x + 9}{x^2 - 4} \cdot \frac{x + 2}{x - 3}$

15. $\frac{x}{x^2 - 9} - \frac{6}{x^2 + 5x + 6}$

16. $\frac{\frac{2x}{x-7}}{\frac{8x^2}{x^2-49}}$

Solve each equation.

$$17. \frac{3}{x-1} = \frac{7}{2x-4} + \frac{1}{x-2}$$

$$18. \frac{2}{x^2 - 6x + 5} = \frac{3}{x-5} + \frac{2}{x-1}$$

19. A car can travel 350 miles in the same amount of time it takes a bus to travel 200 miles. If the average speed of the bus is 15 miles per hour slower than the speed of the car, find the speed of the bus.

Solve. Check for extraneous solutions.

$$20. x = \sqrt{63 - 2x}$$

$$21. \sqrt{x-7} + 12 = 8$$

1. $2x^2 - x - 6$
2. $2x^3 - x^2 + 5x + 8$
3. $2x^2 - 7x - 8$
4. $2x^4 - 5x^3 - 16x^2 + 38x - 16$
5. $4x^2 + 4x - 2 - \frac{14x - 3}{x^2 - x + 2}$
6. $6x^2 + x + 3 + \frac{6}{x - 1}$
7. $(x - 3)(x + 3)(x^2 + 9)$
8. $(2x + 3y)(4x^2 - 6xy + 9y^2)$
9. $5x(5x^2 - y)(5x^2 + y)$
10. $(x + 2)(2x - 3)$
11. $(4x - 5)(16x^2 + 20x + 25)$
12. $(4x - 1)(x + 1)(x - 1)$
13. $x = -1, 2, 3$
14. $\frac{x - 3}{x - 2}, x \neq -2, 2, 3$
15. $\frac{x^2 - 4x + 18}{(x - 3)(x + 3)(x + 2)}, x \neq 3, -3, -2$
16. $\frac{x + 7}{4x}, x \neq -7, 0, 7$
17. $x = -1$
18. $x = 3$
19. 20 mph
20. $x = 7$
21. No solution