

Math 105 - Homework 3**Name:** _____*Simplify the following products by expanding. As always, show your work.*

1. $3(x - 4)$

2. $(x + y - 2z)(-3x)$

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

4. $(r - 2)(4r - 1)$

5. $(a - b)(a + b)$

6. $\frac{(3x - 6)(x + 1)}{3}$

Factor the following expressions as completely as you can.

7. $10x + 5$

8. $-15ab + 6ac$

9. $3x^2 + 2xy$

10. $12xy^2 - 24x^2y$

11. $4x^2(x - 1) - 12x(x - 1)$

12. $5y^2(y^2 + 3) - 10y(y^2 + 3)$

Simplify each of the following expressions as much as you can.

13. $3u + 7 - \frac{24 - 16u}{8}$

14. $\frac{5x - 10y}{5} + \frac{4x + 8y}{x + 2y}$

15. $\frac{(4x^2 - x)(3x - 3)}{(x - 1)(4x - 1)}$

16. $\frac{\frac{(a + b)(a - b)}{2}}{\frac{a + b}{4}}$

Solve for x using factoring and/or distribution.

17. $xy - 2x = 4$

18. $Ax + Bx + Cx = 1$

19. $10(x + 5) + 2(x + 3) = 8$

20. $\frac{x}{y} + 4x = 3$

Factor the polynomials below.

21. $x^2 - 7x + 10$

22. $z^2 + z - 6$

23. $x^2 - 9$

Simplify.

24. $\frac{x^2 + 8x + 16}{x^2 + 11x + 28}$

25. $\frac{x^2 - 9x + 20}{x^2 + x - 20}$

26. $\frac{\frac{x^2 + 4x - 5}{3x + 18}}{\frac{x + 5}{3}}$

27. $\left(\frac{4x + 12}{x^2 - 5x + 6}\right)\left(\frac{x^2 - 3x + 2}{x + 3}\right)$