**Homework: Factoring Polynomials**

In Problems 1-5, factor out the greatest common factor

| | |
|---|---|
| 1. $7(x-2)$ | 2. $5x(x+3)$ |
| 3. $4x^3\left(x^2-2x+5\right)$ | 4. $-9(x-2)$ |
| 5. $(x+3)(2x+5)$ | |

In Problems 6-8, factor by grouping

| | |
|---|---|
| 6. $(x-3)(x^2+4)$ | 7. $(x+2)(x^2+3)$ |
| 8. $(x+1)(x^2-3)$ | |

In Problems 9-19, factor each trinomial

| | |
|---|---|
| 9. $(x+4)(x+8)$ | 10. $(x-9)(x+3)$ |
| 11. $(x-3)(x-7)$ | 12. $(5x+2)(x-3)$ |
| 13. $(7x-10)(x+2)$ | 14. $(5x-1)(7x-2)$ |
| 15. $(4x+1)(3x+7)$ | 16. $(5x-1)(5x-2)$ |
| 17. $(9x+4)(3x-2)$ | 18. $(4x+y)(x+y)$ |
| 19. $(5x+y)(x-5y)$ | |

In Problems 20-24, factor the difference of two squares

| | |
|---|---|
| 20. $(x+8)(x-8)$ | 21. $(3x+4)(3x-4)$ |
| 22. $(2x+3y)(2x-3y)$ | 23. $(x^2+9)(x+3)(x-3)$ |
| 24. $(9x^2+4)(3x+2)(3x-2)$ | |

**Homework: Factoring Polynomials**

In Problems 25-28, factor using the formula for the sum or difference of two cubes

| | |
|---|---|
| 25. $(x+2)(x^2-2x+4)$ | 26. $(x-5)(x^2+5x+25)$ |
| 27. $(3x-2)(9x^2+6x+4)$ | 28. $(2x+3y)(4x^2-6xy+9y^2)$ |

In Problems 29-31, factor completely

| | |
|---|---|
| 29. $5x(x+2)(x-2)$ | 30. $5(x-4)(x+1)$ |
| 31. $(x+7)(x+2)(x-2)$ | |