

Chapter 7 Review

Factoring: A General Strategy

1. Evaluate each term of the polynomial, and place terms in descending order. Check for common coefficients and bases. Factor out (remove) anything common using division (section 7.1).
2. If the polynomial is a binomial, check for negative coefficients. If both terms are squared and only one coefficient is negative, factor as a “difference of two squares” (section 7.2). Caution: If they are both negative, it is still an *unfactorable* “sum of two squares.”
3. If the polynomial is a trinomial, first check for perfect trinomial squares (section 7.3). If it is not a perfect trinomial square, try factoring as an addition or subtraction of multiplications (section 7.4 or 7.5).
4. If the polynomial has four terms and step one above has been completed, try breaking polynomial in pairs that have, by themselves, common factors (section 7.6). Also look for “differences of two squares” and “perfect trinomial squares” that may be part of the polynomial.

Factor completely. (7.1), (7.2), (7.3), (7.4), (7.5), (7.6)

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| 1. $12a^3 + 4a^2 + 2a$ | 27. $18x^2 - 50y^2$ | 53. $x^2 + 5x - 24$ |
| 2. $35b^4 - 7b^2 + 14b$ | 28. $y^2 - 6y + 9$ | 54. $y^2 - 6y + 5$ |
| 3. $16b^3a^3 - 28a^2b^2 + 4ab$ | 29. $25b^2 + 20b + 4$ | 55. $2x^2 + 5x - 7$ |
| 4. $33c^2d^2 - 66c^3d^3 - 55c^2d^2$ | 30. $9x^2 - 36x + 36$ | 56. $4a^2 + 19a + 12$ |
| 5. $2y^6 + 4y^5 - 16y^4 + 18y^3$ | 31. $16x^2 - 8x + 1$ | 57. $2x^2 + 11x - 13$ |
| 6. $y^5 - 15y^4 - 20y^3 + 25y^2$ | 32. $25x^2 + 70x - 49$ | 58. $2x^2 + 13x + 11$ |
| 7. $16z^3 + 8z^4 + 72z^5 + 24z^7$ | 33. $4y^2 + 36y + 81$ | 59. $3a^2 + 29a + 18$ |
| 8. $24a^4 - 9a^3 - 12a^2 + 3a$ | 34. $16y^2 + 40y + 25$ | 60. $5x^2 - 12x - 9$ |
| 9. $3a^4b^4 + 6a^3b^3 - 9a^2b^2$ | 35. $16a^2 - 32a + 16$ | 61. $6x^2 - 13x + 2$ |
| 10. $14a^7b^6c^4 + 28a^8b^5c^4$ | 36. $100x^2 + 160x + 64$ | 62. $7p^2 + 6p - 1$ |
| 11. $11a^4b^4c^4 + 11a^5b^5c^5$ | 37. $32y^2 + 16y + 2$ | 63. $7c^2 + 58c + 16$ |
| 12. $26x^5y^4z^4 - 13x^6y^4z^3$ | 38. $27x^2 + 18x + 3$ | 64. $2x^2 - 7x - 15$ |
| 13. $12a^4b^4 + 16a^7b^4 + 18a^5b^7$ | 39. $75b^2 + 60b + 27$ | 65. $3r^2 - 18r - 21$ |
| 14. $3x^2 - 27$ | 40. $10y^2 + 40y + 40$ | 66. $5x^2 + 49x - 10$ |
| 15. $9x^2 - y^2$ | 41. $18y^2 + 48y + 32$ | 67. $4x^2 + 18x + 20$ |
| 16. $12x^2 - 48y^2$ | 42. $x^2 + 10x + 9$ | 68. $y^3 - y^2 + 2y - 2$ |
| 17. $100x^2 - 10y^2$ | 43. $a^2 + 8a + 12$ | 69. $z^3 + z^2 + 3z + 3$ |
| 18. $x^2 - 25y^2$ | 44. $x^2 + x - 2$ | 70. $x^4 + 2x^3 - 6x - 12$ |
| 19. $20x^2 - 45y^2$ | 45. $x^2 + 5x + 6$ | 71. $xy^4 - 5y^4 + 2x - 10$ |
| 20. $144x^2 - 1$ | 46. $p^2 - 2p - 15$ | 72. $z^4 - z^3 - 3z + 3$ |
| 21. $4x^2 - 36y^2$ | 47. $c^2 + 11c + 18$ | 73. $a^4 - 2a^3 - ab^2 + 2b^2$ |
| 22. $24x^2 - 6y^2$ | 48. $x^2 + 9x - 10$ | 74. $x^3 + 8x - x^2y + 8y$ |
| 23. $20x^2 + 5y^2$ | 49. $r^2 + 17r + 30$ | 75. $9x^2 + 9xy + 2x + 2y$ |
| 24. $50x^2 - 72y^2$ | 50. $x^2 - x - 6$ | 76. $3x^2 - 6x - 7x + 14$ |
| 25. $8x^2 - 50$ | 51. $x^2 + 13x + 22$ | 77. $8x^3 + 32x - x^2 - 4$ |
| 26. $4x^2 - 9$ | 52. $x^2 - 9x + 14$ | 78. $y^3 + 3y + 5y^2 + 15$ |