

Name: Key
Algebra 2

Date: _____

Band: _____

Factoring Study Guide

2.1 Factoring $x^2 + bx + c$

Factor the polynomial.

1. $x^2 + 6x - 27$

$(x+9)(x-3)$

2. $p^2 + 2p - 35$

$(p+7)(p-5)$

3. $b^2 + 18b + 80$

$(b+10)(b+8)$

4. $z^2 - 4z - 21$

$(z-7)(z+3)$

5. $x^2 - 11x + 28$

$(x-7)(x-4)$

2.2 Factoring $ax^2 + bx + c$

Factor the polynomial.

6. $5x^2 + 36x + 7$

$5x^2 + 35x + x + 7$

$5x(x+7) + 1(x+7)$

$(5x+1)(x+7)$

9. $-2y^2 + 7y - 6$

$-(2y^2 - 7y + 6)$

$-(2y^2 - 4y - 3y + 6)$

$-[2y(y-2) - 3(y-2)]$

$-(2y-3)(y-2)$

7. $3t^2 + 16t - 12$

$3t^2 + 18t - 2t - 12$

$3t(t+6) - 2(t+6)$

$(3t-2)(t+6)$

10. $3z^2 + 26z - 9$

$3z^2 + 27z - z - 9$

$3z(z+9) - 1(z+9)$

$(3z-1)(z+9)$

8. $-5y^2 - 22y - 8$

$-(5y^2 + 22y + 8)$

$-(5y^2 + 20y + 2y + 8)$

$-[5y(y+4) + 2(y+4)]$

$-(5y+2)(y+4)$

9. $10a^2 - 13a - 3$

$10a^2 - 15a + 2a - 3$

$5a(2a-3) + 1(2a-3)$

$(5a+1)(2a-3)$

2.3 Factoring Special Products

Factor each polynomial.

10. $x^2 - 16$

$(x-4)(x+4)$

11. $25x^2 - 30x + 9$

$(5x-3)^2$

12. $x^2 - 9$

$(x-3)(x+3)$

13. $y^2 - 100$

$(y-10)(y+10)$

14. $z^2 - 6z + 9$

$(z-3)^2$

15. $m^2 + 16m + 64$

$(m+8)^2$

2.4 Factoring Polynomials Completely

Factor each polynomial completely.

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

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

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

17. $2x^4 - 8x^2$

$2x^2(x^2-4)$

$2x^2(x-2)(x+2)$

18. $2x^3 + 18x^2 - 72x$

$2x(x^2 + 9x - 36)$

$2x(x+12)(x-3)$

19. $n^3 - 9n$

$n(n^2-9)$

$n(n+3)(n-3)$

20. $x^2 - 3x + 4ax - 12a$

$x(x-3) + 4a(x-3)$

$(x+4a)(x-3)$

21. $2x^4 + 2x^3 - 20x^2$

$2x^2(x^2+x-10)$