

4.3 Factor Quadratics

Factor each completely.

1) $m^2 - 9m + 14$

$m: 14$

$A: -9$

$F: -7, -2$

$(m^2 - 7m) + (2m + 14)$

$m(m-7) + 2(m-7)$

$(m-2)(m-7)$

3) $x^2 + x - 12$

$m: -12$

$A: 1$

$F: 4, -3$

$(x^2 + 4x) + (-3x - 12)$

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

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

5) $n^2 - 7n - 18$

$m: -18$

$A: -7$

$F: -9, 2$

$(n^2 - 9n) + (2n - 18)$

$n(n-9) + 2(n-9)$

$(n+2)(n-9)$

7) $n^2 - 3n - 70$

$m: -70$

$a: -3$

$f: -10, 7$

$(n^2 - 10n) + (-7n - 70)$

$n(n-10) - 7(n-10)$

$(n-10)(n+7)$

2) $x^2 + 2x - 48$

$m: -48$

$A: 2$

$F: 8, -6$

$x^2 + 8x - 6x - 48$

$x(x+8) - 6(x+8)$

$(x-6)(x+8)$

4) $v^2 + 3v - 18$

$m: -18$

$A: 3$

$F: 6, -3$

$(v^2 + 6v) + (-3v - 18)$

$v(v+6) - 3(v+6)$

$(v-3)(v+6)$

6) $x^2 - 10x + 24$

$m: 24$

$a: -10$

$f: -6, -4$

$(x^2 - 6x) + (-4x + 24)$

$x(x-6) - 4(x-6)$

$(x-4)(x-6)$

8) $n^2 - 7n - 30$

$m: -30$

$A: -7$

$f: -10, 3$

$(n^2 - 10n) + (3n - 30)$

$n(n-10) + 3(n-10)$

$(n+3)(n-10)$

9) $20p^2 + 44p + 24$

$4(5p^2 + 11p + 6)$

$m: 30$

$a: 11$

$f: 6, 5$

$4((5p^2 + 6p) + 5p + 6)$
 $p(5p + 6) + 1(5p + 6)$

$4(5p + 6)(p + 1)$

11) $25n^2 - 35n$

$5n(n - 7)$

13) $2r^2 + 3r - 20$

$m: -40$

$a: 3$

$f: 8, -5$

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

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

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

15) $7x^2 + 11x + 4$

$m: 28$

$a: 11$

$f: 7, 4$

$(7x^2 + 7x) + (4x + 4)$

$7x(x + 1) + 4(x + 1)$

$(7x + 4)(x + 1)$

10) $5v^2 - 48v + 64$

$m: 320$

$a: -48$

$f: -40, -8$

$(5v^2 - 40v) - 8v + 64$

$5v(v - 8) - 8(v - 8)$

$(5v - 8)(v - 8)$

12) $15n^2 - 87n + 60$

$3(5n^2 - 29n + 20)$

$m: 100$

$a: -29$

$f: -25, -4$

$3(5n^2 - 25n) + 4n + 20$

$3(5n(n - 5) + 4(n - 5))$

$3(5n - 4)(n - 5)$

14) $3p^2 - 4p$

$p(3p - 4)$

16) $10x^2 - 86x - 140$

$2(5x^2 - 43x - 70)$

$m: 350$

$a: -43$

$f: -50, 7$

$2(5x^2 - 50x) + (7x - 70)$

$2(5x(x - 10) + 7(x - 10))$

$2(5x + 7)(x - 10)$