

Solving Monic Quadratics

Factor, set each bracket to zero, and solve.

1. Negative–Negative Roots

a) $x^2 + 3x + 2 = 0$

$$(x-1)(x-2) \implies x = -1, x = -2$$

b) $x^2 + 6x + 5 = 0$

$$(x-1)(x-5) \implies x = -1, x = -5$$

c) $x^2 + 8x + 7 = 0$

$$(x-1)(x-7) \implies x = -1, x = -7$$

d) $x^2 + 5x + 6 = 0$

$$(x-2)(x-3) \implies x = -2, x = -3$$

e) $x^2 + 8x + 15 = 0$

$$(x-3)(x-5) \implies x = -3, x = -5$$

f) $x^2 + 12x + 35 = 0$

$$(x-5)(x-7) \implies x = -5, x = -7$$

g) $x^2 + 18x + 77 = 0$

$$(x-7)(x-11) \implies x = -7, x = -11$$

h) $x^2 + 24x + 143 = 0$

$$(x-11)(x-13) \implies x = -11, x = -13$$

i) $x^2 + 15x + 26 = 0$

$$(x-2)(x-13) \implies x = -2, x = -13$$

2. Positive–Positive Roots

a) $x^2 - 3x + 2 = 0$

$$(x-1)(x-2) \implies x = 1, x = 2$$

b) $x^2 - 6x + 5 = 0$

$$(x-1)(x-5) \implies x = 1, x = 5$$

c) $x^2 - 12x + 11 = 0$

$$(x-1)(x-11) \implies x = 1, x = 11$$

d) $x^2 - 5x + 6 = 0$

$$(x-2)(x-3) \implies x = 2, x = 3$$

e) $x^2 - 8x + 15 = 0$

$$(x-3)(x-5) \implies x = 3, x = 5$$

f) $x^2 - 12x + 35 = 0$

$$(x-5)(x-7) \implies x = 5, x = 7$$

g) $x^2 - 18x + 77 = 0$

$$(x-7)(x-11) \implies x = 7, x = 11$$

h) $x^2 - 24x + 143 = 0$

$$(x-11)(x-13) \implies x = 11, x = 13$$

i) $x^2 - 15x + 26 = 0$

$$(x-2)(x-13) \implies x = 2, x = 13$$

3. Mixed Roots (Negative Dominant)

a) $x^2 + 2x - 3 = 0$

$$(x-3)(x-1) \implies x = -3, x = 1$$

b) $x^2 + 4x - 5 = 0$

$$(x-5)(x-1) \implies x = -5, x = 1$$

c) $x^2 + 6x - 7 = 0$

$$(x-7)(x-1) \implies x = -7, x = 1$$

d) $x^2 + 3x - 10 = 0$

$$(x-5)(x-2) \implies x = -5, x = 2$$

e) $x^2 + 4x - 21 = 0$

$$(x-7)(x-3) \implies x = -7, x = 3$$

f) $x^2 + 9x - 22 = 0$

$$(x-11)(x-2) \implies x = -11, x = 2$$

g) $x^2 + 10x - 39 = 0$

$$(x-13)(x-3) \implies x = -13, x = 3$$

h) $x^2 + 6x - 55 = 0$

$$(x-11)(x-5) \implies x = -11, x = 5$$

i) $x^2 + 8x - 65 = 0$

$$(x-13)(x-5) \implies x = -13, x = 5$$

4. Mixed Roots (Positive Dominant)

a) $x^2 - 4x - 5 = 0$

$$(x-1)(x-5) \implies x = -1, x = 5$$

b) $x^2 - 6x - 7 = 0$

$$(x-1)(x-7) \implies x = -1, x = 7$$

c) $x^2 - 10x - 11 = 0$

$$(x-1)(x-11) \implies x = -1, x = 11$$

d) $x^2 - 3x - 10 = 0$

$$(x-2)(x-5) \implies x = -2, x = 5$$

e) $x^2 - 4x - 21 = 0$

$$(x-3)(x-7) \implies x = -3, x = 7$$

f) $x^2 - 6x - 55 = 0$

$$(x-5)(x-11) \implies x = -5, x = 11$$

g) $x^2 - 10x - 39 = 0$

$$(x-3)(x-13) \implies x = -3, x = 13$$

h) $x^2 - 11x - 26 = 0$

$$(x-2)(x-13) \implies x = -2, x = 13$$

i) $x^2 - 2x - 35 = 0$

$$(x-5)(x-7) \implies x = -5, x = 7$$