

chapter

2

Algebra 2

Section 2.5 Forming quadratic equations from their roots

PROJECT MATHS
Text & Tests 6

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$$f(x) = x^2 + 3x + 2$$

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

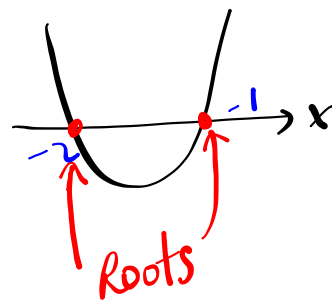
FACTORS

$$(x + 2)(x + 1) = 0$$

$x + 2 = 0$	$x + 1 = 0$
$x = -2$	$x = -1$

ROOTS/SOLUTIONS

Solve?
find roots?
x values
when $y = 0$?



Roots are -1 and -2
quadratic equation is?

$$x^2 - (\text{sum of roots})x + (\text{product of roots}) = 0$$

$$x^2 - (-1 + -2)x + (-1)(-2) = 0$$

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

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

Given r_1, r_2 as the roots of an equation, then the equation is

$$x^2 - x(r_1 + r_2) + r_1r_2 = 0,$$

i.e. $x^2 - x(\text{sum of the roots}) + \text{product of the roots} = 0.$

Example 1

Write the equation of a curve whose roots are 7 and -5 .

FACTORS

$$(x-7)(x+5) = 0$$

$$x^2 + 5x - 7x - 35 = 0$$

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

Example 2

If $x = \sqrt{3}$ and $x = \frac{-\sqrt{3}}{2}$ are the roots of a quadratic equation $ax^2 + bx + c = 0$, find a, b and c .

$$x^2 - \left(\sqrt{3} + \frac{-\sqrt{3}}{2}\right)x + (\sqrt{3})\left(\frac{-\sqrt{3}}{2}\right) = 0$$

$$x^2 - \frac{\sqrt{3}}{2}x - \frac{3}{2} = 0$$

$$2x^2 - \sqrt{3}x - 3 = 0$$