

SOLVING POLYNOMIAL EQUATIONS BY FACTORING

How do we solve polynomial equations? Below is a general procedure on how to approach polynomial equations in various forms.

Step 1: Move everything to one side of the equal sign using inverse operations.

Example 1: $3x^2 = 4x - 2$

← Once we reach this point in the problem, skip to step 3.

Step 2: If necessary, simplify the polynomial.

Example 2

$$(x - 4)(x + 6) = 0$$

Example 3

$$(x + 3)(x - 3) = 8x$$

Step 3: Completely factor the polynomial.

Example 3: $x^2 - 8x - 9 = 0$

Step 4: Set each factor equal to zero and solve for the variable.

Example 3 completed:

Here are the various forms polynomial equations can take.

Solve each.

$$1) \quad x = (x - 6)^2$$

$$2) \quad x(x - 1)(x + 3)^2 = 0$$

$$3) \quad y^3 - 27y + 6y^2 = 0$$

$$4) \quad (x + 2)(x^2 - 3x - 28) = 0$$