

FACTORISING : QUADRATICS

Zero product property and factored quadratic equations

The **zero product property** states that if $ab=0$, then either a or b is equal to 0

For a quadratic equation such as $(x-5)(x+2)=0$, we know that either $x-5=0$ or $x+2=0$. Solving these two linear equations gives us the two solutions to the quadratic equation. $x=2$ and $x=5$

What are the solutions to the equation

$$(x-4)(3x+1) = 0 ?$$

$x = \underline{\hspace{2cm}}$ and $\underline{\hspace{2cm}}$

What are the solutions to the equation

$$(x-1)(2x+3) = 0 ?$$

$x = \underline{\hspace{2cm}}$ and $\underline{\hspace{2cm}}$

What are the solutions to the equation

$$(2x-3)(2x-7) = 0 ?$$

$x = \underline{\hspace{2cm}}$ and $\underline{\hspace{2cm}}$

What are the solutions to the equation

$$(m+8)(m-2) = 0 ?$$

$m = \underline{\hspace{2cm}}$ and $\underline{\hspace{2cm}}$

What are the solutions to the equation

$$(2y+9)(2y-7) = 0 ?$$

$x = \underline{\hspace{2cm}}$ and $\underline{\hspace{2cm}}$

What are the solutions to the equation

$$(5x-1)(x+4) = 0 ?$$

$x = \underline{\hspace{2cm}}$ and $\underline{\hspace{2cm}}$

What are the solutions to the equation

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

x= _____ and _____

What are the solutions to the equation

$$-12(5x+1)(4x-5) = 0 ?$$

x= _____ and _____

What are the solutions to the equation ?

$$(3x-5)(7x-7) = 0$$

x= _____ and _____

What are the solutions to the equation

$$\frac{5}{7}(5x-3)(x-7) = 0 ?$$

x= _____ and _____

Solving factorable quadratic equations

Solve the equation : $x^2 - 2x - 3 = 0$ by factoring the given quadratic into $(x+a)(x+b)$, where :

$a+b$ = coefficient of x term , -2

ab = constant term , -3

-3 and 1 would work such that $-3 + 1 = -2$ and $(-3)(1) = -3$

This means , $x^2 - 2x - 3 = 0$ can be re-written as $(x-3)(x+1)$ and solve the quadratic equation using the zero product property.

Solve :

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

x = _____ and _____

Solve :

$$x^2 + 9x + 14 = 0$$

x = _____ and _____

Solve :

$$x^2 + 21x + 20 = 0$$

x = _____ and _____

Solve :

$$x^2 - 3x - 18 = 0$$

x = _____ and _____

Solve :

$$x^2 - 2x - 8 = 0$$

x = _____ and _____

Solve :

$$x^2 + 10x - 24 = 0$$

x = _____ and _____

Solve :

$$x^2 - 13x + 30 = 0$$

x = _____ and _____

Solve :

$$x^2 + 4x - 12 = 0$$

x = _____ and _____

Solve :

$$x^2 + 24x + 63 = 0$$

x = _____ and _____

Solve :

$$x^2 - 16x + 64 = 0$$

x = _____ and _____

Solve :

$$x^2 - 6x = 27$$

$x = \underline{\hspace{2cm}}$ and $\underline{\hspace{2cm}}$

Solve :

$$w^2 + 2w = 8$$

$w = \underline{\hspace{2cm}}$ and $\underline{\hspace{2cm}}$

BONUS PROBLEMS

1) Solve :

$$y^2 + 9y + 2 = 8y + 58$$

$y = \underline{\hspace{2cm}}$ and $\underline{\hspace{2cm}}$

2) Solve :

$$x^2 + 70 = 17x$$

$x = \underline{\hspace{2cm}}$ and $\underline{\hspace{2cm}}$