



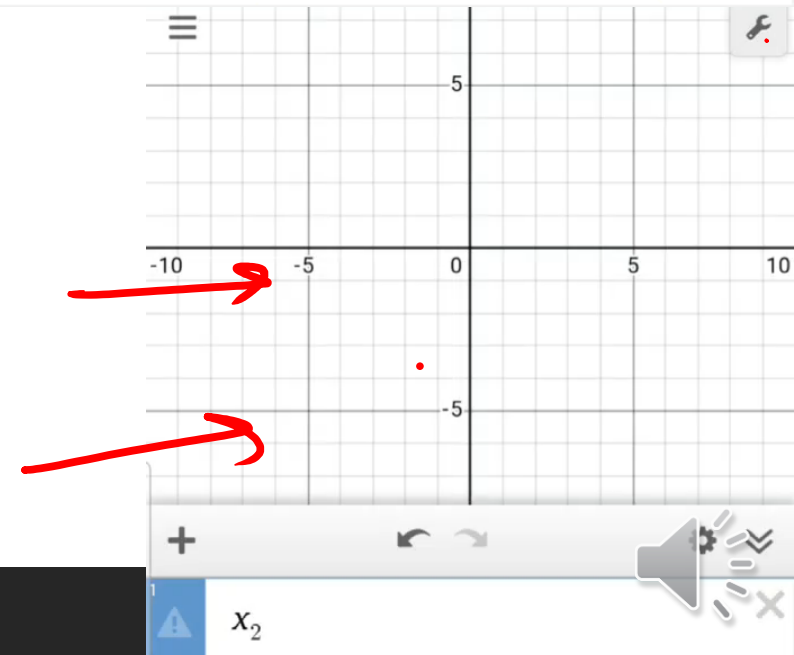
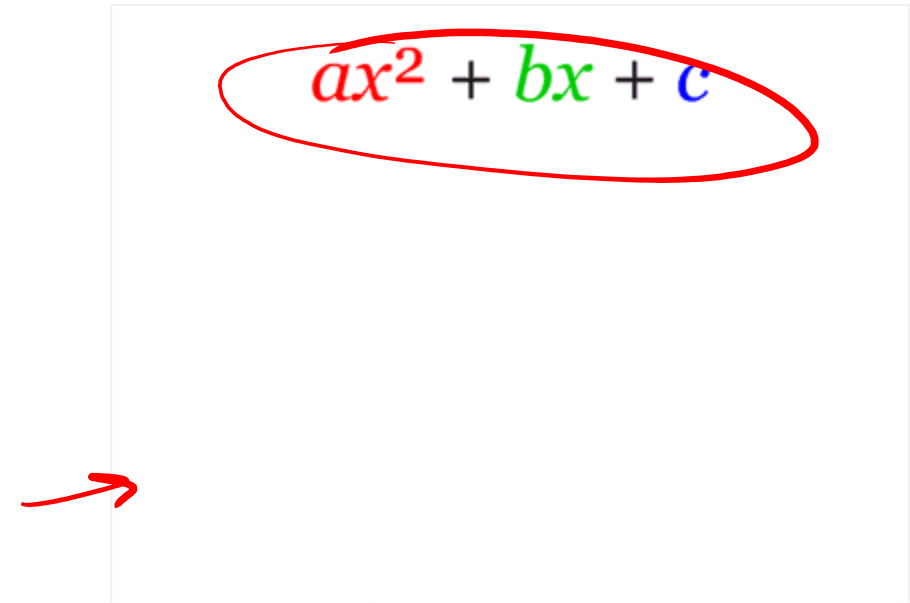
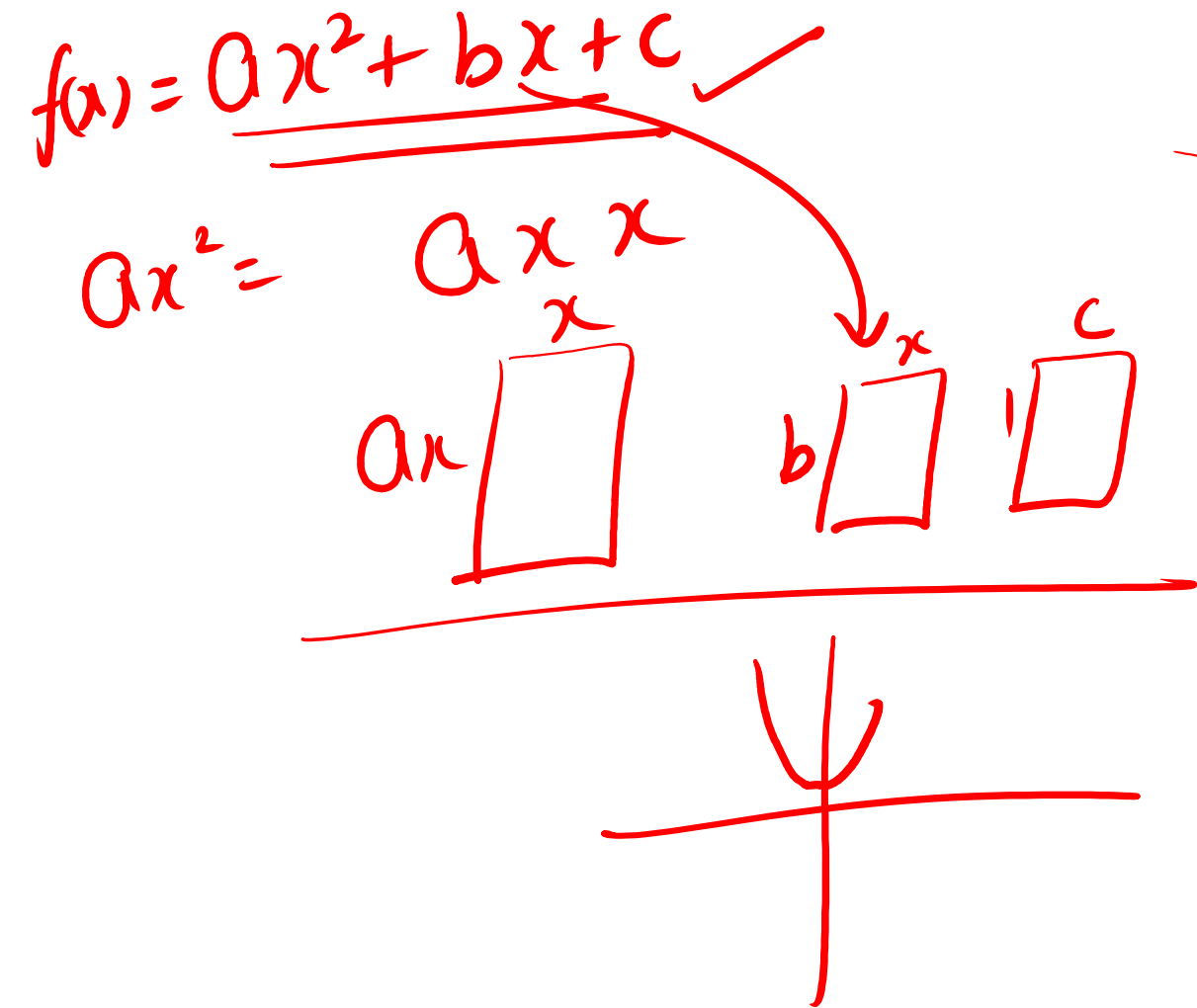
QUADRATIC EQUATIONS ✓

Introduction
and Quadratic Equations
Chapter: 4, Exercise: 4.1

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Some basic information



Check whether the following are quadratic equations: ✓

1) $(x + 1)^2 = 2(x - 3)$ 2) $(x - 2)(x + 1) = (x - 1)(x + 3)$

$ax^2 + bx + c = 0$

Q1 $(x+1)^2 = 2(x-3)$ $(a+b)^2$
↓
 $a^2 + b^2 + 2ab$

$x^2 + 1 + 2x = 2x - 6$
 $x^2 + 1 + 2x - 2x + 6 = 0$

$1x^2 + 7 = 0$ $ax^2 + bx + c = 0$

$1x^2 + 0x + 7 = 0$
quadratic equation

Q2 $(x-2)(x+1) = (x-1)(x+3)$
 $x(x+1) - 2(x+1) = x(x+3) - 1(x+3)$

$x^2 + x - 2x - 2 = x^2 + 3x - x - 3$

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

$-x - 2x - 2 + 3 = 0$

$1 - 3x + 1 = 0$

linear equation



$$3) x^2 + 3x + 1 = (x - 2)^2$$

$$4) (x - 3)(2x + 1) = x(x + 5)$$

$$(a+b)(a+b) = a(a+b) + b(a+b)$$

Q3 $x^2 + 3x + 1 = (x - 2)^2$

$$(a-b)^2 = a^2 + b^2 - 2ab$$

$$x^2 + 3x + 1 = x^2 + (-2)^2 - 2x(2)$$

$$x^2 + 3x + 1 = x^2 + 4 - 4x$$

$$\underline{x^2 + 3x + 1 - x^2 - 4 + 4x = 0}$$

$$\underline{7x - 3 = 0}$$

Linear equation

Q4 $(x-3)(2x+1) = x(x+5)$

$$x(2x+1) - 3(2x+1) = x^2 + 5x$$

$$2x^2 + \underline{x} - \underline{6x} - 3 = x^2 + 5x$$

$$\underline{2x^2 - 5x - 3 - x^2 - 5x = 0}$$

$$\underline{1x^2 - 10x - 3 = 0}$$

quadratic equation



$$(x + 2)^{\textcircled{3}} = 2x(x^2 - 1)$$

$$(a+b)^3 = a^3 + b^3 + \underline{3ab(a+b)} = a^3 + b^3 + \underline{3a^2b + 3ab^2}$$

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

$$x^3 + 8 + 6x(x+2) = 2x^3 - 2x$$

$$\underline{x^3 + 8} + \underline{6x^2 + 12x} - \underline{2x^3} + \underline{2x} = 0$$

$$-\textcircled{x^3} + 6x^2 + 14x + 8 = 0$$

↳ Cubic equation



$$(x^3 - 4x^2 - x + 1 = (x - 2)^3)$$

$$(a-b)^3 = a^3 - b^3 - 3ab(a-b)$$

$$x^3 - 4x^2 - x + 1 = x^3 - (2)^3 - 3(x)(2)(x-2)$$

$$\cancel{x^3} - 4x^2 - x + 1 = \cancel{x^3} - 8 - 6x(x-2)$$

$$-4x^2 - x + 1 = -8 - 6x^2 + 12x$$

$$-4x^2 - \underline{x + 1} + \underline{8} + \underline{6x^2} - \underline{12x} = 0$$

$$\underline{2x^2 - 13x + 9 = 0}$$

quadratics

