Recovery Lesson

Knowing how to solve and verify a first degreed equation

1) The first-degree equation has no solution

This occurs when no number, replaced by the unknown, satisfies the first degree equation. In this case it is said that the equation is impossible.

Example:

$$3x + 1 = 5x - 2x - 8$$

2) The first degree equation has a solution

This occurs when a single number, replaced by the unknown, satisfies the first degree equation. In this case it is said that the equation is determined.

Example:

$$2x + 1 = 5x - 8$$

3) The first degree equation has an infinite number of solutions

This occurs when any number, replaced by the unknown, satisfies the equation. In this case it is said that the equation is indeterminate or that it is an identity.

Example:

$$3x + 1 = 5x - 2x - 8 + 9$$

Classification of the first degree equations according to their form

1) First degree equation

A first-degree equation is said to be whole when its members are first-degree polynomials in the unknown x.

Example:

$$3x+1=5x-2x-8; \qquad \frac{1}{5}x+7=\frac{2}{3}+2x; \qquad \frac{7x-1}{2}=\frac{3x-3}{5}$$

2) First degree equation Fractional

A first degree equation is said to be fractional when, in at least one of its members, the unknown quantity appears in the denominator. Examples:

$$3x+1=\frac{3x}{2x-5}; \qquad \frac{2}{x}-9=\frac{3x+6}{2x}$$

How to solve the equations of first degree

Exercises

First level equations - Solved Exercises -

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

$$6x + 2 + x - 6x - 3 = x + 4x - 4 - 4x - 3$$
$$x - x - 4x + 4x = -2 + 3 - 4$$
$$0x = -6$$

Impossible equation

$2\left(x + \frac{1}{2}\right) = 5x + 1 - 3x$ equazione di primo grado numerica intera

Svolgimento:

$$2x + 1 = 5x + 1 - 3x$$
$$2x - 5x + 3x = 0$$
$$0x = 0$$

Indeterminate Equation

$\frac{2x-1}{3} - \frac{x-5}{6} = \frac{x-3}{4}$ equazione di primo grado numerica intera

Svolgimento:

$$\frac{4(2x-1) - 2(x-5)}{12} = \frac{3(x-3)}{12}$$
$$4(2x-1) - 2(x-5) = 3(x-3)$$
$$8x - 4 - 2x + 10 = 3x - 9$$
$$8x - 2x - 3x = 4 - 10 - 9$$
$$3x = -15$$
$$\frac{3x}{3} = \frac{-15^{5}}{3}$$
$$x = -5$$

$$\frac{x+1}{2x12}-\frac{x+3}{4-4x}=\frac{11}{4}$$ equazione di primo grado frazionaria numerica

Svolgimento:

$$\frac{x+1}{2(x-1)}-\frac{x+3}{4(1-x)}=\frac{11}{4}$$

$$\frac{x+1}{2(x-1)}-\frac{x+3}{-4(x-1)}=\frac{11}{4}$$

$$\frac{x+1}{2(x-1)}+\frac{x+3}{4(x-1)}=\frac{11}{4}$$ C.A. $x \neq 1$

$$\frac{2(x+1)+(x+3)}{4(x-1)}=\frac{11(x-1)}{4(x-1)}$$

$$2(x+1)+(x+3)=11(x-1)$$

$$2x+2+x+3=11x-11$$

$$-8x=-16$$

$$\frac{-8x}{-8}=\frac{-16}{-8}$$

X=2

Acceptable Solution

$$1-\frac{4x}{2x+1}=\frac{x-1}{1-x}$$ equazione di primo grado frazionaria numerica C.A. $x \neq -\frac{1}{2};\ x \neq 1$

$$\frac{(2x+1)(1-x)-4x(1-x)}{(2x+1)(1-x)}=\frac{(2x+1)(x-1)}{(2x+1)(1-x)}$$

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

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

$$-2x=-2$$

$$\frac{-2x}{-2}=\frac{-2}{-2}$$

The solution would be x = -1 but you can not accept because to compare in C.A .. so we must conclude that the equation is Impossible

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