

Equazioni letterali

1) $3ax + 1 = 0$
 x incognita
 $a \in \mathbb{R}$ parametro

$$a = 3 \quad 9x + 1 = 0$$

$$a = -1 \quad -3x + 1 = 0$$

$$4x + 1 = 0$$

$$x = 3 \quad 12 + 1 \neq 0$$

$$3ax + 1 = 0, \quad \underline{3ax} = -1$$

Se $a \neq 0$, allora $x = -\frac{1}{3a}$

Se $a = 0$, allora $S = \emptyset$

$$2) 4x = 3a ; x = \frac{3a}{4}$$

$$3) ax + 2x = 2a + 4$$

$$(a+2)x = 2(a+2)$$

Se $a+2 \neq 0$, cioè se $a \neq -2$, allora:

$$x = \frac{2(a+2)}{a+2} = 2$$

Se $a = -2$, allora $0 = 0$, quindi:
 $S = \mathbb{R}$

$$4) 2x - 4(3x - a) = 6(a - 2x) + 6a$$

$$2x - 12x + 4a = 6a - 12x + 6a$$

$$2x = -4a + 6a + 6a$$

$$2x = 8a ; x = 4a$$

$$5) (a^2 - 3a)x = a(a^2 - 9)$$

$$a \underline{(a-3)}x = a \underline{(a-3)}(a+3)$$

Se $a \neq 0 \wedge a \neq 3$, allora:

$$x = \frac{\cancel{a} \cancel{(a-3)}(a+3)}{\cancel{a} \cancel{(a-3)}} = a+3$$

Se $a = 0$, allora $0x = 0$
 $S = \mathbb{R}$

Se $a = 3$, allora $0x = 0$
 $S = \mathbb{R}$

$$6) k^2x - 2kx - k = 0$$

$$k^2x - 2kx = k$$

$$\underline{kx} \underline{(k-2)} = k$$

Se $k \neq 0 \wedge k \neq 2$, allora:

$$x = \frac{\cancel{k}}{\cancel{k}(k-2)} = \frac{1}{k-2}$$

$$\text{Se } K=0, \text{ si ha: } 0x=0$$

$$S = \mathbb{R}$$

$$\text{Se } K=2, \text{ si ha: } 0x=2$$

$$S = \emptyset$$

Diseguazioni letterali

$$1) \quad 3ax - a - 6a > -2 + 4ax$$

$$3ax - 4ax > a + 6a - 2$$

$$-ax > 7a - 2$$

$$ax < 2 - 7a$$

$$\text{Se } a = 0, \text{ si ha: } 0 < 2 \quad S = \mathbb{R}$$

$$\text{Se } a > 0, \text{ si ha: } x < \frac{2 - 7a}{a}$$

$$\text{Se } a < 0, \text{ si ha: } x > \frac{2 - 7a}{a}$$

$$2) \quad x - a(x-1) > x(1+a)$$

$$\cancel{x} - ax + a > \cancel{x} + ax$$

$$-ax - ax > -a$$

$$-2ax > -a \quad \underline{2ax} < a$$

$$\text{Se } a = 0, \text{ si ha: } 0 < 0 \quad S = \emptyset$$

Se $a > 0$, allora $x < \frac{a}{2a}$; $x < \frac{1}{2}$

Se $a < 0$, allora $x > \frac{a}{2a}$; $x > \frac{1}{2}$