

## EQUAZIONI DI PRIMO GRADO LETTERALI INTERE

1.  $ax + 1 - a = 0$

$$ax = a - 1$$

Se  $a = 0$ :  $0x = -1$  *eq.ne imp.*

Se  $a \neq 0$ :  $\frac{ax}{a} = \frac{a-1}{a}$   $x = \frac{a-1}{a}$

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

$$3x - a = ax - 3a + 6$$

$$3x - ax = 6 - 2a$$

$$x(3 - a) = 2(3 - a)$$

Se  $a = 3$ :  $0x = 0$  *eq.ne ind.*

Se  $a \neq 3$ :  $\frac{x(3-a)}{3-a} = \frac{2(3-a)}{3-a}$   $x = 2$

3.  $(a + b)x = 4b - (b - a)x$

$$ax + bx = 4b - bx + ax$$

$$2bx = 4b$$

Se  $b = 0$ :  $0x = 0$  *eq.ne ind.*

Se  $b \neq 0$ :  $\frac{2bx}{2b} = \frac{4b}{2b}$   $x = 2$

4.  $(2 - a + b)x = b(x - 2) + 2(x + b - 3)$

$$2x - ax + bx = bx - 2b + 2x + 2b - 6$$

$$-ax = -6$$

$$ax = 6$$

Se  $a = 0$ :  $0x = 6$  *eq.ne imp.*

Se  $a \neq 0$ :  $\frac{ax}{a} = \frac{6}{a}$   $x = \frac{6}{a}$

5.  $3x - (x + a) = 2(x + a) - 4a$

$$3x - x - a = 2x + 2a - 4a$$

$$0x = -a$$

Se  $a = 0$ :  $0x = 0$  *eq.ne ind.*

Se  $a \neq 0$ :  $0x = -a$  *eq.ne imp.*

6.  $2bx - 3(b - 1) = bx - 2b$

$$2bx - 3b + 3 = bx - 2b$$

$$bx = b - 3$$

Se  $b = 0$ :  $0x = -3$  *eq.ne imp.*

Se  $b \neq 0$ :  $\frac{bx}{b} = \frac{b-3}{b}$   $x = \frac{b-3}{b}$

7.  $3a(x - 3a + 2) = x + 1$

$3ax - 9a^2 + 6a = x + 1$

$3ax - x = 9a^2 - 6a + 1$

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

Se  $a = \frac{1}{3}$ :  $0x = 0$  *eq.ne ind.*

Se  $a \neq \frac{1}{3}$ :  $\frac{x(3a - 1)}{3a - 1} = \frac{(3a - 1)^2}{3a - 1}$   $x = (3a - 1)$

8.  $a(bx - 2x + 1) = abx - 2(ax + 1)$

$abx - 2ax + a = abx - 2ax - 2$

$0x = -a - 2$

Se  $a = -2$ :  $0x = 0$  *eq.ne ind.*

Se  $a \neq -2$ :  $0x = -a - 2$  *eq.ne imp.*

9.  $(a - b)x = a + b$

Se  $a = b$ :  $0x = 2a$

Se  $a = 0$ :  $0x = 0$  *eq.ne ind.*  
(ovvero: se  $a = b = 0$ )

Se  $a \neq 0$ :  $0x = 2a$  *eq.ne imp.*  
(ovvero: se  $a = b \neq 0$ )

Se  $a \neq b$ :  $\frac{(a - b)x}{a - b} = \frac{a + b}{a - b}$   $x = \frac{a + b}{a - b}$

10.  $a(x - b - 1) = 2(x - b) - 2$

$ax - ab - a = 2x - 2b - 2$

$ax - 2x = ab + a - 2b - 2$

$x(a - 2) = a(b + 1) - 2(b + 1)$

$x(a - 2) = (b + 1)(a - 2)$

Se  $a = 2$ :  $0x = 0$  *eq.ne ind.*

Se  $a \neq 2$ :  $\frac{(a - 2)x}{a - 2} = \frac{(a - 2)(b + 1)}{a - 2}$   $x = b + 1$

11.  $abx = a + b$

Se  $a = 0$ :  $0x = b$

Se  $b = 0$ :  $0x = 0$  *eq.ne ind.*

Se  $b \neq 0$ :  $0x = b$  *eq.ne imp.*

Se  $b = 0 \wedge a \neq 0$ :  $0x = a$  *eq.ne imp.*

Se  $a \neq 0 \wedge b \neq 0$ :  $\frac{abx}{ab} = \frac{a + b}{ab}$   $x = \frac{a + b}{ab}$

12.  $2b(x - 2b) + x + 1 = 0$

$$2bx - 4b^2 + x + 1 = 0$$

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

$$x(2b + 1) = (2b - 1)(2b + 1)$$

$$\text{Se } b = -\frac{1}{2}: 0x = 0 \quad \text{eq.ne ind.}$$

$$\text{Se } b \neq -\frac{1}{2}: \frac{(2b + 1)x}{2b + 1} = \frac{(2b - 1)(2b + 1)}{2b + 1} \quad x = 2b - 1$$

13.  $2(ax - 1) = b$

$$2ax - 2 = b$$

$$2ax = 2 + b$$

$$\text{Se } a = 0: 0x = 2 + b$$

$$\text{Se } b = -2: 0x = 0 \quad \text{eq.ne ind.}$$

$$\text{Se } b \neq -2: 0x = 2 + b \quad \text{eq.ne imp.}$$

$$\text{Se } a \neq 0: \frac{2ax}{2a} = \frac{b + 2}{2a} \quad x = \frac{b + 2}{2a}$$

14.  $ax - a(2a - 1) + (a + 1)x = 4(a + 2) - 2(3a + 5)$

$$ax - 2a^2 + a + ax + x = 4a + 8 - 6a - 10$$

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

$$x(2a + 1) = (2a + 1)(a - 2)$$

$$\text{Se } a = -\frac{1}{2}: 0x = 0 \quad \text{eq.ne ind.}$$

$$\text{Se } a \neq -\frac{1}{2}: \frac{(2a + 1)x}{2a + 1} = \frac{(2a + 1)(a - 2)}{2a + 1} \quad x = a - 2$$

15.  $(a + 3b)x + a = b - (2b - a)x$

$$ax + 3bx + a = b - 2bx + ax$$

$$5bx = b - a$$

$$\text{Se } b = 0: 0x = -a$$

$$\text{Se } a = 0: 0x = 0 \quad \text{eq.ne ind.}$$

$$\text{Se } a \neq 0: 0x = -a \quad \text{eq.ne imp.}$$

$$\text{Se } b \neq 0: \frac{5bx}{5b} = \frac{b - a}{5b} \quad x = \frac{b - a}{5b}$$