

## B6. Sistemi di primo grado - Esercizi

Risolvi i seguenti sistemi per via algebrica e per via geometrica.

- 1)  $\begin{cases} y = x - 1 \\ y = -\frac{1}{3}x + 3 \end{cases}$  [(3;2)]
- 2)  $\begin{cases} y = -2x \\ y = -\frac{1}{2}x + 3 \end{cases}$  [(-2;4)]
- 3)  $\begin{cases} y = \frac{2}{3}x - 2 \\ y = -x + 3 \end{cases}$  [(3;0)]
- 4)  $\begin{cases} y = -x + 2 \\ y = 3x - 2 \end{cases}$  [(1;1)]
- 5)  $\begin{cases} y = 3 \\ y = \frac{1}{2}x \end{cases}$  [(6;3)]
- 6)  $\begin{cases} y = 3x \\ y = \frac{1}{2}x \end{cases}$  [(0;0)]
- 7)  $\begin{cases} y = -\frac{2}{3}x + 2 \\ y = -3x - 5 \end{cases}$  [(-3;4)]
- 8)  $\begin{cases} y = -1 \\ y = x + 8 \end{cases}$  [(-9;-1)]
- 9)  $\begin{cases} y = \frac{2}{5}x + 2 \\ y = -x - \frac{3}{2} \end{cases}$  [(-5/2;1)]
- 10)  $\begin{cases} y = 2x + 1 \\ y = -2x - 3 \end{cases}$  [(-1;-1)]
- 11)  $\begin{cases} 3x - y + 5 = 0 \\ x + 2y - 10 = 0 \end{cases}$  [(0;5)]
- 12)  $\begin{cases} 4x + y = 0 \\ x + y + 2 = -1 \end{cases}$  [(1;-4)]
- 13)  $\begin{cases} x - 3y = -2 \\ 2x + 2y = -4 \end{cases}$  [(-2;0)]
- 14)  $\begin{cases} -2x + 3y = 0 \\ x - 3y = 3 \end{cases}$  [(-3;-2)]
- 15)  $\begin{cases} 5x - y + 1 = 0 \\ 2x + 3y = 54 \end{cases}$  [(3;16)]
- 16)  $\begin{cases} x + y + 1 = 0 \\ x + y - 1 = 0 \end{cases}$  [impossibile]
- 17)  $\begin{cases} x + y + 1 = 0 \\ 2y = -2x - 2 \end{cases}$  [indeterminata]
- 18)  $\begin{cases} 3x - 2y = -7 \\ 4y - 6x = 14 \end{cases}$  [indeterminata]
- 19)  $\begin{cases} 2y - 6 = x \\ 5x = 10y - 20 \end{cases}$  [impossibile]
- 20)  $\begin{cases} -7x + y + 5 = 0 \\ 2x - y = 0 \end{cases}$  [(1;2)]
- 21)  $\begin{cases} y = x \\ y = x - 3 \end{cases}$  [impossibile]
- 22)  $\begin{cases} y = -x \\ y = +x \end{cases}$  [(0;0)]
- 23)  $\begin{cases} y = -\frac{1}{2}x \\ y = 3x + 2 \end{cases}$  [(-4/7;2/7)]

- 24)  $\begin{cases} y = -\frac{2}{3}x + 2 \\ y = \frac{2}{3}x \end{cases}$  [(3/2;1)]
- 25)  $\begin{cases} y = \frac{5}{3}x - 8 \\ y = -x \end{cases}$  [(3;-3)]
- 26)  $\begin{cases} \frac{1}{2}x + \frac{1}{3}y = 4 \\ \frac{3}{2}x - \frac{1}{3}y = 0 \end{cases}$  [(2;9)]
- 27)  $\begin{cases} \frac{7}{2}x + y = 5 \\ 2x - \frac{2}{3}y = 1 \end{cases}$  [(1;3/2)]
- 28)  $\begin{cases} x\sqrt{3} + y = 3 \\ 2x\sqrt{3} - 3y = 6 \end{cases}$  [( $\sqrt{3}$ ; 0)]
- 29)  $\begin{cases} \frac{2}{5}x - \frac{1}{2}y = \frac{1}{4} \\ \frac{3}{2}x - 2y = 1 \end{cases}$  [(0;-1/2)]
- 30)  $\begin{cases} -\frac{2}{3}x + \frac{1}{4}y = 2 \\ -8x + 3y = 24 \end{cases}$  [indeterminata]
- 31)  $\begin{cases} 14x + 7y = 4 \\ x + y = \frac{1}{7} \end{cases}$  [(3/7;-2/7)]
- 32)  $\begin{cases} \frac{2}{3}x + \frac{6}{10}y = \frac{1}{15} \\ 20x + 18y = 3 \end{cases}$  [impossibile]
- 33)  $\begin{cases} \frac{x-2}{3} + \frac{y}{5} = \frac{1}{15} \\ 4x - 3y = 7 \end{cases}$  [(2;1/3)]
- 34)  $\begin{cases} \frac{x-2}{2} + \frac{y-3}{4} = -\frac{3}{2} \\ \frac{2x-1}{5} - \frac{3+y}{10} = -\frac{6}{5} \end{cases}$  [(-1;3)]
- 35)  $\begin{cases} \frac{3}{8} - \frac{1}{2}x + \frac{5}{6}y + \frac{1}{2} = 0 \\ 2x + \frac{4}{3}y = 0 \end{cases}$  [(1/2;-3/4)]
- 36)  $\begin{cases} \frac{-3x+5}{3} + \frac{1}{4} = \frac{y-2}{6} + \frac{7}{6} \\ 3-5y + \frac{6}{5}x = \frac{45}{2} \end{cases}$  [(5/3;-7/2)]
- 37)  $\begin{cases} \frac{x}{7} + \frac{y}{9} = \frac{x-y+8}{63} \\ x-y = -\frac{1}{2} \end{cases}$  [(1/4;3/4)]
- 38)  $\begin{cases} 2-x=0 \\ 2+y=0 \end{cases}$  [(2;-2)]
- 39)  $\begin{cases} 2-x=0 \\ 2-x+y=3 \end{cases}$  [(2;3)]
- 40)  $\begin{cases} x=5 \\ 3-\frac{1}{4}x=0 \end{cases}$  [impossibile]
- 41)  $\begin{cases} y = x - \frac{1}{2} \\ y = -x - \frac{7}{2} \end{cases}$  [(-3/2;-2)]
- 42)  $\begin{cases} y = \frac{1}{3}x - \frac{2}{3} \\ y = \frac{1}{2}x - 2 \end{cases}$  [(8;2)]

- 43) 
$$\begin{cases} \frac{3x-y}{7} = -1 \\ \frac{1}{3}x + \frac{1}{2}y = -2 \end{cases} \quad [(-3; -2)]$$
- 44) 
$$\begin{cases} \frac{2x+1}{3} - \frac{2-y}{9} = \frac{1}{9} \\ \frac{x-1}{6} + \frac{y}{3} = -2 \end{cases} \quad [(1; -6)]$$
- 45) 
$$\begin{cases} y = -\frac{3}{2} \\ y = x - 3 \end{cases} \quad [(3/2; -3/2)]$$
- 46) 
$$\begin{cases} 2x + y = \frac{1-2\sqrt{3}}{2} \\ y\sqrt{3} + x = 0 \end{cases} \quad \left[ \left( -\frac{\sqrt{3}}{2}; \frac{1}{2} \right) \right]$$
- 47) 
$$\begin{cases} y = x + 1 \\ y = -\frac{1}{4}x + \frac{9}{4} \end{cases} \quad [(1; 2)]$$
- 48) 
$$\begin{cases} y = -\frac{1}{4}x + \frac{1}{2} \\ y = x - \frac{13}{4} \end{cases} \quad [(3; -1/4)]$$
- 49) 
$$\begin{cases} 5 - x\sqrt{2} + \sqrt{6} = y \\ y\sqrt{6} - 3x\sqrt{3} = 6 \end{cases} \quad [(\sqrt{2}; 3 + \sqrt{6})]$$
- 50) 
$$\begin{cases} x + 2y + 3 = 0 \\ 2x - y - 14 = 0 \end{cases} \quad [(5; -4)]$$
- 51) 
$$\begin{cases} x + y = 12 \\ x - y = 2 \end{cases} \quad [(7; 5)]$$
- 52) 
$$\begin{cases} 2x + y = 3 \\ 2y + 7x = 0 \end{cases} \quad [(-2; 7)]$$
- 53) 
$$\begin{cases} x + y = 3 \\ x - y = 1 \end{cases} \quad [(2; 1)]$$
- 54) 
$$\begin{cases} x + y = -6 \\ x - y = 10 \end{cases} \quad [(2; -8)]$$
- 55) 
$$\begin{cases} y = -\frac{3}{4}x - 1 \\ y = \frac{1}{2}x - 6 \end{cases} \quad [(4; -4)]$$
- 56) 
$$\begin{cases} y = \frac{1}{2}x - \frac{5}{2} \\ y = \frac{5}{4}x - 1 \end{cases} \quad [(-2; -7/2)]$$

**Risolvi i seguenti sistemi a più incognite.**

- 57) 
$$\begin{cases} 2x + 2y - z = -5 \\ x + y = -1 \\ z - y = 4 \end{cases} \quad [(0; -1; 3)]$$
- 58) 
$$\begin{cases} x - y - z = 0 \\ x + y = 0 \\ x - z + 2y = -3 \end{cases} \quad [(1; -1; 2)]$$
- 59) 
$$\begin{cases} x + 2z = 0 \\ y + 3z = 0 \\ x + y = 5 \end{cases} \quad [(2; 3; -1)]$$
- 60) 
$$\begin{cases} x + y + z = 0 \\ z + y = -1 \\ x + 2 = 3 \end{cases} \quad [\text{indeterminata}]$$
- 61) 
$$\begin{cases} 2x - 2y + z = 6 \\ x + z = 4 \\ x - z = 0 \end{cases} \quad [(2; 0; 2)]$$

- 62)  $\begin{cases} x-y+z=0 \\ 2x+2-2y=2 \\ x+y=0 \end{cases}$  [(0;0;0)]
- 63)  $\begin{cases} x-y-z=0 \\ y+z=0 \\ x+y=1 \end{cases}$  [(0;1;-1)]
- 64)  $\begin{cases} 2x+3y=-5 \\ z+x-2y=8 \\ x-y=5 \end{cases}$  [(2;-3;0)]
- 65)  $\begin{cases} a-b+c=0 \\ a+c=2 \\ a+b+c=4 \end{cases}$  [indeterminata]
- 66)  $\begin{cases} x+3y-5z-8=0 \\ y+z=0 \\ x+5y=5 \end{cases}$  [(0;1;-1)]
- 67)  $\begin{cases} x+y=1 \\ x-y-z=0 \\ 4y+2z=2 \end{cases}$  [indeterminata]
- 68)  $\begin{cases} x+z+4y=0 \\ 2x+y=1 \\ (z-x)\cdot 2=1 \end{cases}$  [(3/4;-1/2;5/4)]
- 69)  $\begin{cases} 8x+6z=12 \\ y=-\frac{1}{3} \\ 2x+2y=1 \end{cases}$  [(5/6;-1/3;8/9)]
- 70)  $\begin{cases} x-2y=0 \\ -2x+4y+z=0 \\ z=0 \end{cases}$  [indeterminata]
- 71)  $\begin{cases} x+y-2z=0 \\ 2x-y+3z=0 \\ 3x+z=2 \end{cases}$  [impossibile]
- 72)  $\begin{cases} 2x+y+5z=3 \\ 4x+2y+10z=3 \\ x-y=0 \end{cases}$  [impossibile]
- 73)  $\begin{cases} x+z+2y=0 \\ 3x+y=0 \\ 5x+z=10 \end{cases}$  [(1;-3;5)]
- 74)  $\begin{cases} 2x+y+z=1 \\ y+z=5 \\ 2x-z=-8 \end{cases}$  [(-2;1;4)]
- 75)  $\begin{cases} x-y=8 \\ 5x+4z=-y \\ 2z+x=2 \end{cases}$  [(1;-7;1/2)]
- 76)  $\begin{cases} x+y+z=3 \\ 2x+2y+5z=0 \\ y-x=+2 \end{cases}$  [(3/2;7/2;-2)]
- 77)  $\begin{cases} x+y=1 \\ x+2z=-3 \\ x+z+w=2 \\ 2w+3z=0 \end{cases}$  [(1;0;-2;3)]
- 78)  $\begin{cases} 4=4a+2b+c \\ 1=a+b+c \\ 1=a-b+c \end{cases}$  [(1;0;0)]
- 79)  $\begin{cases} -3=9a+3b+c \\ 0=4a+2b+c \\ 0=c \end{cases}$  [(-1;2;0)]

- 80) 
$$\begin{cases} y+w=0 \\ 2x+z=1 \\ x+2y+4w=1 \\ 6y+z=0 \end{cases} \quad [(2; 1/2; -3; -1/2)]$$
- 81) 
$$\begin{cases} a+b+c+d=0 \\ 2a+2b+c=0 \\ b+2c=-1 \\ a+d=0 \end{cases} \quad [(-1/2; 1; -1; 1/2)]$$
- 82) 
$$\begin{cases} \frac{-b}{2a} = -1 \\ \frac{-b^2+4ac}{4a} = 2 \\ -2 = a+b+c \end{cases} \quad [(-1; -2; 1)]$$
- 83) 
$$\begin{cases} \frac{-b}{2a} = 0 \\ \frac{-b^2+4ac}{4a} = -2 \\ 2 = 4a+2b+c \end{cases} \quad [(1; 0; -2)]$$
- 84) 
$$\begin{cases} a+2b+c+2d=0 \\ a+d=0 \\ b+c+2a=0 \\ 3a-2b+2d=7 \end{cases} \quad [(-7/5; -21/5; 7; 7/5)]$$
- 85) 
$$\begin{cases} \frac{-b}{2a} = 0 \\ \frac{1-b^2+4ac}{4a} = 0 \\ \frac{-1-b^2+4ac}{4a} = \frac{1}{2} \end{cases} \quad [(-1; 0; 1/4)]$$
- 86) 
$$\begin{cases} c=0 \\ (b-2)^2 - 4ac = 0 \\ a+b+c=0 \end{cases} \quad [(-2; 2; 0)]$$