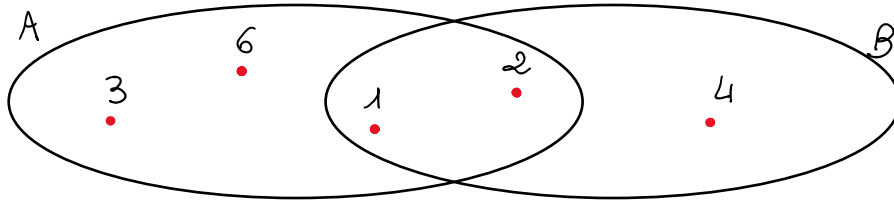


1. Rappresenta graficamente i due insiemi:  $A = \{x \mid x \text{ divide } 6, x \in \mathbb{N}\}$  e  $B = \{x \mid x \text{ divide } 4, x \in \mathbb{N}\}$  e determina gli insiemi:



$$A \cup B = \{1, 2, 3, 4, 6\} \quad A \cap B = \{1, 2\} \quad A - B = \{3, 6\} \quad B - A = \{4\}$$

2. Siano dati gli insiemi  $A = \{1, 2, 3, 4, 5\}$ ,  $B = \{2, 4, 6\}$  e  $C = \{3, 4, 8\}$ . Determina l'insieme:

$$(A - B) \cap (B \cup C) = \{1, 3, 5\} \cap \{2, 3, 4, 6, 8\} = \{3\}$$

3. Determina MCD e mcm dei seguenti gruppi di monomi:

			MCD	mcm
$7a^3bx$	$14a^3b^2y$	$4a^2b^5x^3$	$a^2b$	$28a^3b^5x^3y$
$0,03abxy^2$	$0,5a^2b^3y^2$	$0,3x^5$	$1$	$a^2b^3x^5y^2$

Semplifica le seguenti espressioni con i monomi:

$$4. \quad 18a^6b^3 : (-6a^4b^2) + a(-5ab) + 8a^2b \\ = -3a^2b - 5a^2b + 8a^2b = 0$$

$$5. \quad \left\{ \left[ \frac{3}{2} a^2b^3c : \left( -\frac{2}{3} ab^2c \right) \right]^2 \cdot \left( -\frac{2}{3} \right)^4 a^2bc^5 \right\} : (a^4b^3c^5) \\ = \left\{ \left[ -\left( \frac{3}{2} \right)^2 ab \right]^2 \cdot \left( -\frac{2}{3} \right)^4 a^2bc^5 \right\} : (a^4b^3c^5) = \left[ \left( \frac{3}{2} \right)^4 a^2b^2 \cdot \left( -\frac{2}{3} \right)^4 a^2bc^5 \right] : (a^4b^3c^5) = a^4b^3c^5 : (a^4b^3c^5) = 1$$

$$6. \quad 5a^6x^4 + (-4a^4x^2)^3 : (-2a^3x)^2 - (-6a^2)(-a^2x^2)^2 - (-5a^3x^2)^3 : (25a^3x^2) \\ = 5a^6x^4 + (-2^2)^3 a^{12}x^6 : (2^2 a^6x^2) + 6a^2 \cdot a^4x^4 + 5^3 a^9x^6 : (5^2 a^3x^2) = \\ = 5a^6x^4 - 2^6 a^{12}x^6 : (2^2 a^6x^2) + 6a^6x^4 + 5a^6x^4 = \\ = 5a^6x^4 - 2^4 a^6x^4 + 6a^6x^4 + 5a^6x^4 = 5a^6x^4 - 16a^6x^4 + 6a^6x^4 + 5a^6x^4 = 0$$

Semplifica le seguenti espressioni con i prodotti notevoli:

$$\begin{aligned}
 7. \quad & 3a^2 - 5x(a - 2x + 3) - 2(a + 7x)\left(\frac{1}{7}a - x\right) + 2x\left(\frac{5}{2}a - 12x\right) - \frac{5}{7}a^2 \\
 & = 3a^2 - 5ax + 10x^2 - 15x - 2\left(\frac{1}{7}a^2 - ax + ax - 7x^2\right) + 5ax - 24x^2 - \frac{5}{7}a^2 = \\
 & = 3a^2 - 14x^2 - 15x - \frac{2}{7}a^2 + 14x^2 - \frac{5}{7}a^2 = \mathbf{2a^2 - 15x}
 \end{aligned}$$

$$\begin{aligned}
 8. \quad & [x^2(x^2 - x + 1) + x^3 + 1](x - 1) - (x^2 - 1)(x^3 + 1) - 2x^2(x - 1) \\
 & = (x^4 - x^3 + x^2 + x^3 + 1)(x - 1) - (x^5 + x^2 - x^3 - 1) - 2x^3 + 2x^2 = \\
 & = (x^4 + x^2 + 1)(x - 1) - x^5 - x^2 + x^3 + 1 - 2x^3 + 2x^2 = \\
 & = x^5 - x^4 + x^3 - x^2 + x - 1 - x^5 + x^2 - x^3 + 1 = \mathbf{-x^4 + x}
 \end{aligned}$$

$$\begin{aligned}
 9. \quad & \left(\frac{1}{3}x^2 + y^2\right)^3 + \left(\frac{1}{3}x^2 - y^2\right)^3 - \frac{2}{3}x^2\left(\frac{1}{3}x^2 + 3y^2\right)\left(\frac{1}{3}x^2 - 3y^2\right) - 8x^2y^4 \\
 & = \frac{1}{27}x^6 + \frac{1}{3}x^4y^2 + x^2y^4 + y^6 + \frac{1}{27}x^6 - \frac{1}{3}x^4y^2 + x^2y^4 - y^6 - \frac{2}{3}x^2\left(\frac{1}{9}x^4 - 9y^4\right) - 8x^2y^4 = \\
 & = \frac{2}{27}x^6 + 2x^2y^4 - \frac{2}{27}x^6 + 6x^2y^4 - 8x^2y^4 = \mathbf{0}
 \end{aligned}$$

$$\begin{aligned}
 10. \quad & (5a - b)^2 + (5a + 4b)^2 - 2(5a + 2b)(5a - 2b) - (-5b)^2 \\
 & = 25a^2 - 10ab + b^2 + 25a^2 + 40ab + 16b^2 - 2(25a^2 - 4b^2) - (25b^2) = \\
 & = 50a^2 + 30ab + 17b^2 - 50a^2 + 8b^2 - 25b^2 = \mathbf{30ab}
 \end{aligned}$$