

$$\textcircled{1} \quad x^2 - 5x - 6 = (x+1)(x-6) = 0 \quad \begin{cases} \rightarrow x_1 = -1 \\ \rightarrow x_2 = 6 \end{cases}$$

$$x^2 + 4x + 3 = (x+1)(x+3) = 0 \quad \begin{cases} \rightarrow x_1 = -1 \\ \rightarrow x_2 = -3 \end{cases}$$

$$6 + (-3) = 3 \quad \text{ANSWER: E}$$

$$\textcircled{2} \quad a+x, a+y, a+z, a+u \quad \begin{matrix} 1 \leq x, y, z, u \leq 4 \\ x \neq y \neq z \neq u \end{matrix}$$

$$(a+x)(a+y) + (a+z)(a+u) = 2a^2 + a(x+y+z+u) + xy + zu =$$

$$* x+y+z+u = 1+2+3+4 = 10$$

$$= 2a^2 + 10a + xy + zu$$

$$xy + zu =$$

$$1 \cdot 2 + 3 \cdot 4 = 14$$

$$1 \cdot 3 + 2 \cdot 4 = 11$$

$$1 \cdot 4 + 2 \cdot 3 = 10$$

$$2 \cdot 3 + 1 \cdot 4 = 10$$

$$2 \cdot 4 + 1 \cdot 3 = 11$$

$$3 \cdot 4 + 1 \cdot 2 = 14$$

$$\text{Max}(xy+zu) - \text{Min}(xy+zu)$$

$$= 14 - 10 = 4$$

ANSWER: D

$$\textcircled{3} \quad x\left(b + \frac{1}{x}\right) = y$$

$$xb + 1 = y$$

$$x = \frac{y-1}{b}$$

ANSWER: A