

受験番号 _____

氏名 _____

問 1

1) $5x + 2 \geq 0$ のとき $x < -\frac{2}{5}$ のとき

$$5x + 2 = 3$$

$$-(5x + 2) = 3$$

すなわち $x \geq -\frac{2}{5}$ のとき $-5x - 2 = 3$

$$5x = 1$$

$$-5x = 5$$

$$\therefore x = \frac{1}{5}$$

$$x = -1$$

$$\therefore x = \frac{1}{5}, -1$$

2) $x \geq 5$ または $y < -3$

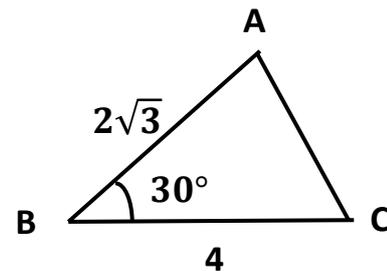
3) $AC^2 = AB^2 + BC^2 - 2 \cdot AB \cdot BC \cdot \cos B$

$$AC^2 = 12 + 16 - 2 \cdot 2\sqrt{3} \cdot 4 \times \frac{\sqrt{3}}{2}$$

$$= 12 + 16 - 24 = 4$$

$AC > 0$ より

$$AC = 2$$



4) $\sqrt{1} < \sqrt{2} < \sqrt{3} < \sqrt{4}$

$$1 < \sqrt{3} < 2$$

整数部分は 1

$$1 + \sqrt{3} = 2 + y \text{ とおける}$$

$$y = \sqrt{3} - 1$$

$$x^2 - xy - y^2$$

$$4 - 2y - y^2$$

$$4 - 2(\sqrt{3} - 1) - (\sqrt{3} - 1)^2$$

$$4 - 2\sqrt{3} + 2 - 3 + 2\sqrt{3} - 1 = 2$$

A. 2

5) ${}_4C_2 \times {}_5C_2 = \frac{4 \times 3}{2} \times \frac{5 \times 4}{2} = 6 \times 10 = 60$

A. 60通り

6) $\cos^2 \theta = 1 - \sin^2 \theta$

$$= 1 - \left(\frac{12}{13}\right)^2 = 1 - \frac{144}{169} = \frac{25}{169}$$

$\cos \theta > 0$ より

$$\cos \theta = \frac{5}{13}$$

問 2

1)
$$\begin{aligned} & (2 + \sqrt{3} - \sqrt{7})(2 + \sqrt{3} + \sqrt{7}) \\ &= (2 + \sqrt{3})^2 - (\sqrt{7})^2 \\ &= 4 + 4\sqrt{3} + 3 - 7 \\ &= 4\sqrt{3} \end{aligned}$$

2)
$$\begin{aligned} \frac{12}{2 + \sqrt{3} - \sqrt{7}} &= \frac{12(2 + \sqrt{3} + \sqrt{7})}{(2 + \sqrt{3} - \sqrt{7})(2 + \sqrt{3} + \sqrt{7})} \\ &= \frac{12}{4\sqrt{3}}(2 + \sqrt{3} + \sqrt{7}) = \frac{3\sqrt{3}}{3}(2 + \sqrt{3} + \sqrt{7}) \\ &= 2\sqrt{3} + 3 + \sqrt{21} \end{aligned}$$

問 3

1) 20人

2) 8人

