

BOARD OF INTERMEDIATE & SECONDARY EDUCATION, SAHIAL

SUBJECT: Mathematics EXAM II-Annual 2022 CLASS: II-Y
 GROUP: Dst DATE: 07-12-22

(GENERAL INSTRUCTIONS FOR MARKING KEY)

Q8(a)

$$m_1x - y + c_1 = 0$$

$$m_2x - y + c_2 = 0$$

$$m_3x - y + c_3 = 0$$

are concurrent $\therefore$

$$\begin{vmatrix} m_1 & -1 & c_1 \\ m_2 & -1 & c_2 \\ m_3 & -1 & c_3 \end{vmatrix} = 0 \quad (2M)$$

$$m_1 \begin{vmatrix} c_2 & c_3 \\ m_2 & m_3 \end{vmatrix} + c_1 \begin{vmatrix} m_2 & m_3 \\ m_3 & -1 \end{vmatrix} = 0$$

$$m_1(c_2 - c_3) + (m_2c_3 - m_3c_2) + c_1(m_3 - m_2) = 0$$

Add & Sub. m_1, c_1

(2M)

after some calculation we

$$\text{get } (m_2 - m_1)(c_3 - c_1) = (m_3 - m_1)(c_2 - c_1) \quad (1M)$$

$$Q8(b) \quad x^2 + y^2 = 2$$

$$\text{radius } a = \sqrt{2} \quad (1M)$$

$$\text{and } x - 2y + 1 = 0$$

$$m = \frac{1}{2} \quad (1M)$$

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$$\begin{aligned} \text{As } y &= mx \pm a \sqrt{1+m^2} \quad (1M) \\ &= \frac{1}{2}x \pm \sqrt{2} \sqrt{1+\frac{1}{4}} \\ &= \frac{1}{2}x \pm \sqrt{2} \sqrt{\frac{5}{4}} \\ &= \frac{1}{2}x \pm \sqrt{\frac{10}{4}} \\ &= \frac{1}{2}x \pm \frac{\sqrt{10}}{2} \end{aligned}$$

$$2y = x \pm \sqrt{10} \quad (2M)$$

$$\therefore x - 2y + \sqrt{10} = 0$$

$$x - 2y - \sqrt{10} = 0$$