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COMPUTER SCIENCE

$$x^2 + y^2 - 5x - y + 4 = 0 \quad (1, 0)$$

$$(x-a)^2 + (y-b)^2 = r^2$$

$$x^2 - 5x + y^2 - y = -4$$

$$\left(x^2 - 5x + \frac{25}{4}\right) - \frac{25}{4} + \left(y^2 - y + \frac{1}{4}\right) - \frac{1}{4} = -4$$

$$\left(x + \frac{5}{2}\right)^2 + \left(y + \frac{1}{2}\right)^2 = \frac{10}{4}$$

centre is  $\left(-\frac{5}{2}, -\frac{1}{2}\right)$  radius =  $\sqrt{\frac{10}{4}}$

$$m_2 = \frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - (-\frac{1}{2})}{1 - (-\frac{5}{2})} = \frac{\frac{1}{2}}{\frac{7}{2}} = \frac{1}{2} \times \frac{2}{7} = \frac{1}{7}$$

$$\frac{1}{7} \times m = -1$$

$$m = -7$$

$$\begin{aligned} \therefore y - y_1 &= m(x - x_1) \\ &= y - 0 = -7(x - 1) \\ &= y = -7x + 7 \end{aligned}$$

$$x^2 + y^2 - 12x - 12y + 47 = 0 \quad (1, 0)$$

$$x^2 - 12x + y^2 - 12y = -47$$

$$(x+6)^2 + (y+6)^2 = -47 + 36 + 36$$

$$(x+6)^2 + (y+6)^2 = 25$$

Centre is  $(-6, -6)$  radius = 5

$$m_2 = \frac{y_2 - y_1}{x_2 - x_1} = \frac{0 + 6}{1 + 6} = \frac{6}{7}$$

$$\frac{6}{7} \times m = -1$$

$$m = -\frac{7}{6}$$

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$$y - y_1 = m(x - x_1)$$
$$y - 0 = \frac{7}{6}(x - 1)$$

$$6y = 7(x - 1)$$
$$\frac{6y}{6} = \frac{7x}{6} - \frac{7}{6}$$

$$y = \frac{7x}{6} - \frac{7}{6}$$

3  $x^2 + y^2 - 8x + 14y + 40 = 0$  (1, 0)

$$x^2 - 8x + y^2 + 14y = -40$$

$$(x+4)^2 + (y-7)^2 = -40 + 16 + 49$$

$$(x+4)^2 + (y-7)^2 = 25$$

Centre is  $(-4, 7)$  & Radius = 5

$$m_{12} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - 7}{1 + 4} = -\frac{7}{5}$$

$$-\frac{7}{5} \times m = -1$$

$$m = \frac{5}{7}$$

$$y - y_1 = m(x - x_1)$$
$$y - 0 = \frac{5}{7}(x - 1)$$

$$y = \frac{5}{7}x - \frac{5}{7}$$