

$$r_1: y = 3x + 1$$

$$r_2: m_{r_2} = \frac{2-3}{3-6} = \frac{1}{3}$$

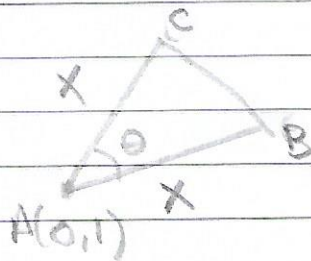
$$y - 2 = \frac{1}{3}(x - 3)$$

$$y = \frac{x}{3} + 1$$

$$\frac{x}{3} + 1 = 3x + 1$$

$$x = 0$$

$$y = 1$$



$$\tan \theta = \frac{3 - \frac{1}{3}}{1 + 3 \cdot \frac{1}{3}} = \frac{\frac{8}{3}}{2} = \frac{4}{3}$$

$$\Rightarrow \theta = \tan^{-1}\left(\frac{4}{3}\right)$$

$$A = 4 = \frac{x^2 \sin \theta}{2}$$

$$\Rightarrow 8 = x^2 \sin(\tan^{-1}(\frac{4}{3}))$$

$$x^2 = 10 \Rightarrow x = \sqrt{10}$$

$$B: d((0,1), (x, \frac{x}{3} + 1)) = \sqrt{10} \Leftrightarrow \sqrt{x^2 + (1 - \frac{x}{3} - 1)^2} = \sqrt{10} \Leftrightarrow \frac{10x^2}{9} = 10$$

$$\Rightarrow x = 3, y = \frac{3}{3} + 1 = 2 \Leftrightarrow B: (3, 2)$$

$$C: d((0,1), (x, 3x+1)) = \sqrt{10} \Leftrightarrow x^2 + (1 - 3x - 1)^2 = 10 \Leftrightarrow 10x^2 = 10$$

$$x^2 = 1$$

$$\Rightarrow x = 1, y = 3 \cdot 1 + 1 = 4 \Leftrightarrow C(1, 4)$$

