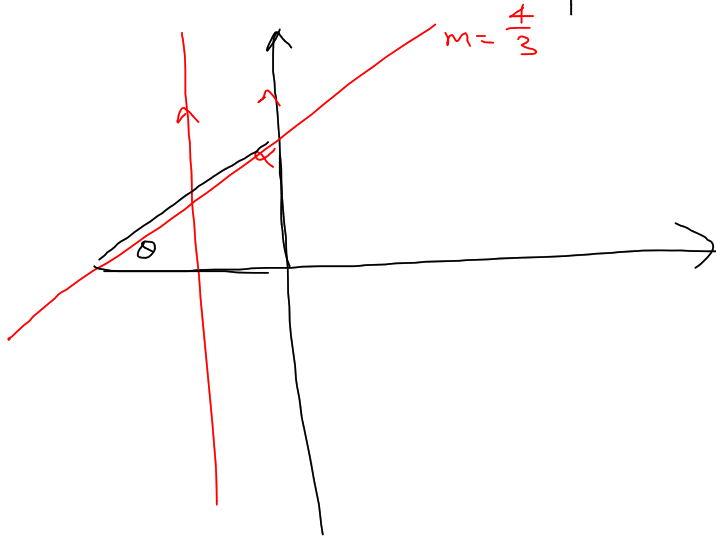
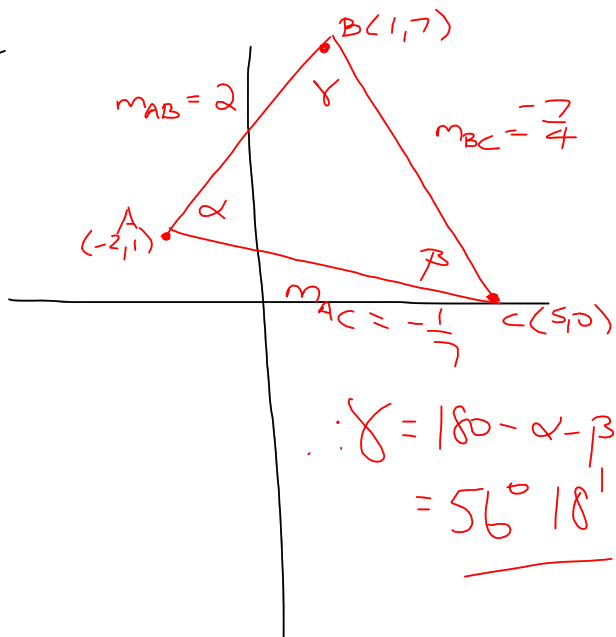


4/ $x = -1$, $4x - 3y + 5 = 0$



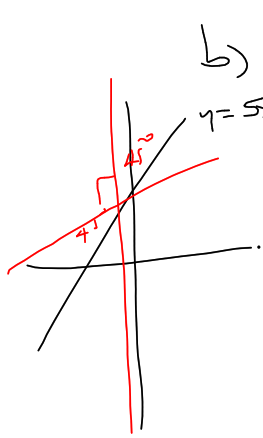
8/



$$\begin{aligned} \tan \alpha &= \left| \frac{2 + \frac{1}{7}}{1 + (2)\left(\frac{1}{7}\right)} \right| \\ &= \frac{15}{5} \\ &= 3 \\ \alpha &= 71^\circ 34' \end{aligned}$$

$$\begin{aligned} \tan \beta &= \left| \frac{-\frac{1}{7} + \frac{7}{4}}{1 + \left(-\frac{1}{7}\right)\left(\frac{7}{4}\right)} \right| \\ &= \frac{45}{35} \\ \beta &= 52^\circ 8' \end{aligned}$$

1(b) a) $\Rightarrow y-1=m(x-1)$ always goes through $(1,1)$



b) $y = 5x + 6$

$y = 5x + 6$

$\tan 45^\circ =$

$y - 1 = m(x - 1)$

$$\left| \frac{5-m}{1+5m} \right|$$

$$|5-m| = |1+5m|$$

$$5-m = 1+5m$$

$$6m = 4$$

$$m = \frac{2}{3}$$

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

$$3y - 3 = 2x - 2$$

$$\underline{2x - 3y + 1 = 0}$$

or $-(5-m) = 1+5m$

$$-5+m = 1+5m$$

$$4m = -6$$

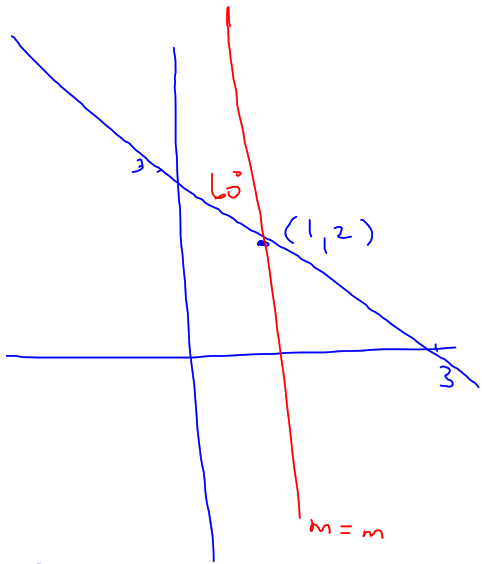
$$m = -\frac{3}{2}$$

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

$$2y - 2 = -3x + 3$$

$$\underline{3x + 2y - 5 = 0}$$

1(a)



$$\tan 60^\circ = \left| \frac{m+1}{1-m} \right|$$

$$\sqrt{3} = \left| \frac{m+1}{1-m} \right|$$

$$\sqrt{3} |1-m| = |m+1|$$

$$\sqrt{3} - \sqrt{3}m = m+1$$

$$(\sqrt{3}+1)m = \sqrt{3}-1$$

$$m = \frac{\sqrt{3}-1}{\sqrt{3}+1}$$

$$\text{or } -\sqrt{3} + \sqrt{3}m = m+1$$

$$(\sqrt{3}-1)m = \sqrt{3}+1$$

$$m = \frac{\sqrt{3}+1}{\sqrt{3}-1}$$

15 passes through $(0,0)$: $y = mx$

$$x + y + (y - x)\sqrt{3} = a$$

$$x + y + \sqrt{3}y - \sqrt{3}x = a$$

$$(1 + \sqrt{3})y = (\sqrt{3} - 1)x + a$$

$$y = \left(\frac{\sqrt{3} - 1}{\sqrt{3} + 1} \right)x + \frac{a}{1 + \sqrt{3}}$$

$$\underline{m = \frac{\sqrt{3} - 1}{\sqrt{3} + 1}}$$

$$\tan 75^\circ = \left| \frac{\frac{\sqrt{3}-1}{\sqrt{3}+1} - m}{1 + \left(\frac{\sqrt{3}-1}{\sqrt{3}+1}\right)m} \right| \quad \frac{\sqrt{3}-1}{\sqrt{3}+1} \times \frac{\sqrt{3}-1}{\sqrt{3}-1}$$

$$2 + \sqrt{3} = \left| \frac{2 - \sqrt{3} - m}{1 + (2 - \sqrt{3})m} \right| \quad = \frac{4 - 2\sqrt{3}}{2}$$

$$= 2 - \sqrt{3}$$

$$(2 + \sqrt{3}) \left| 1 + (2 - \sqrt{3})m \right| = \left| 2 - \sqrt{3} - m \right|$$

$$(2 + \sqrt{3})(1 + (2 - \sqrt{3})m) = 2 - \sqrt{3} - m \quad \text{OR} \quad -(2 + \sqrt{3})(1 + (2 - \sqrt{3})m) = 2 - \sqrt{3} - m$$

$$2 + \sqrt{3} + m = 2 - \sqrt{3} - m \quad -2 - \sqrt{3} - m = 2 - \sqrt{3} - m$$

$$2m = -2\sqrt{3} \quad -2 < 2 \therefore$$

$$m = -\sqrt{3} \quad \therefore \text{misdefined}$$

$$\therefore \underline{y = -\sqrt{3}x \text{ and } x < 0}$$