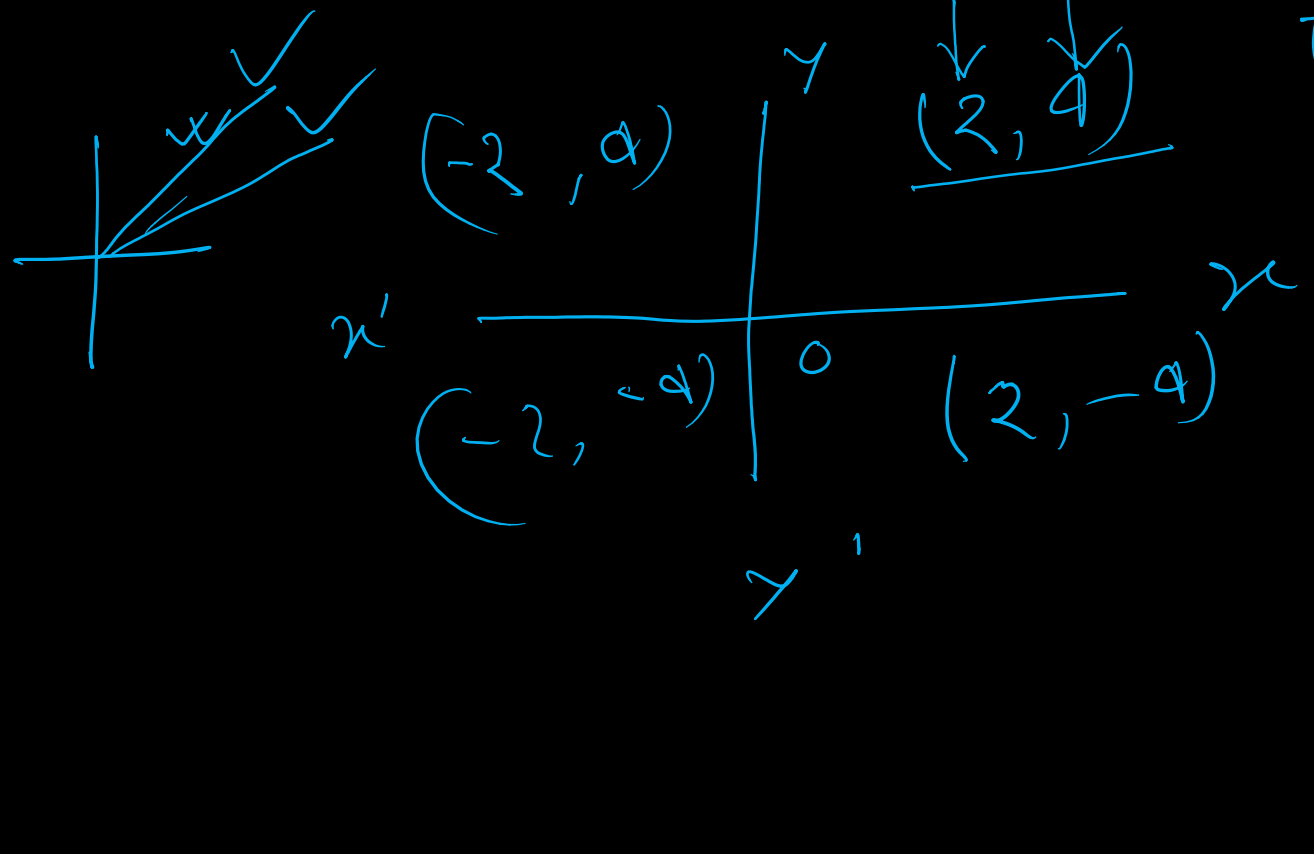
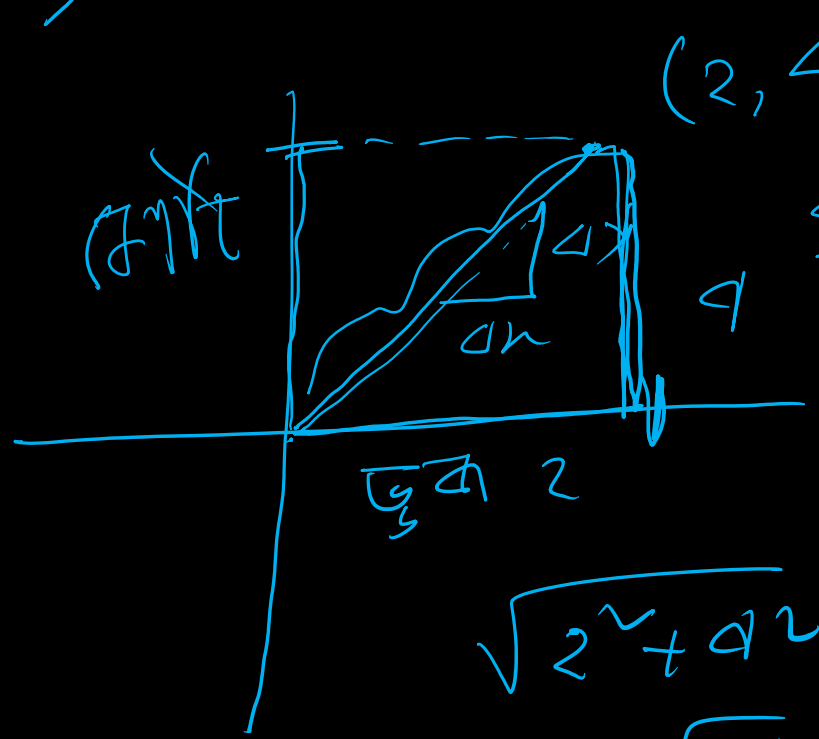
Chapter - 3

$y = mx + c$

$x + y = 10$



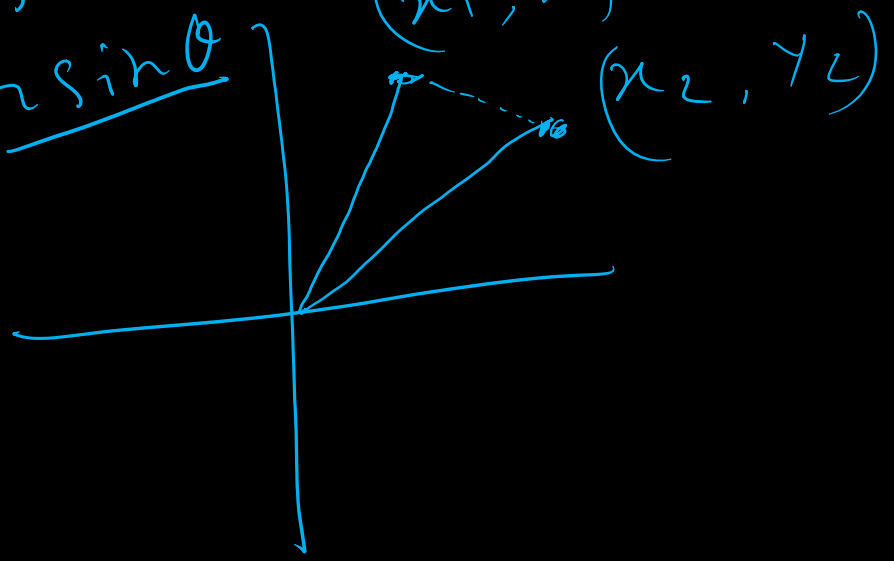


$\sqrt{2^2 + 4^2}$

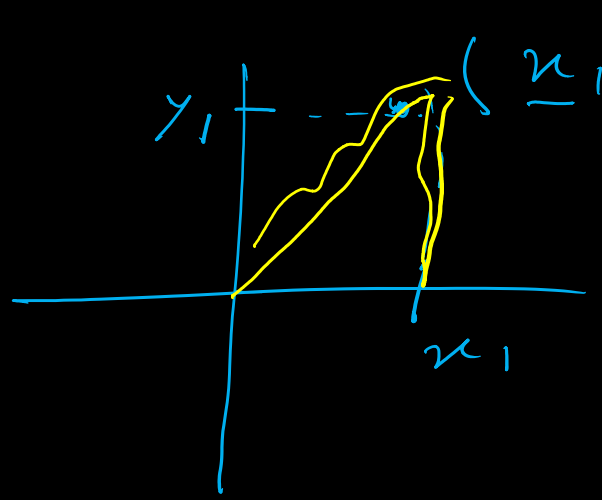
$= \sqrt{20}$

$\sin\theta = \frac{y_1}{r}$

$\Rightarrow y_1 = r\sin\theta$



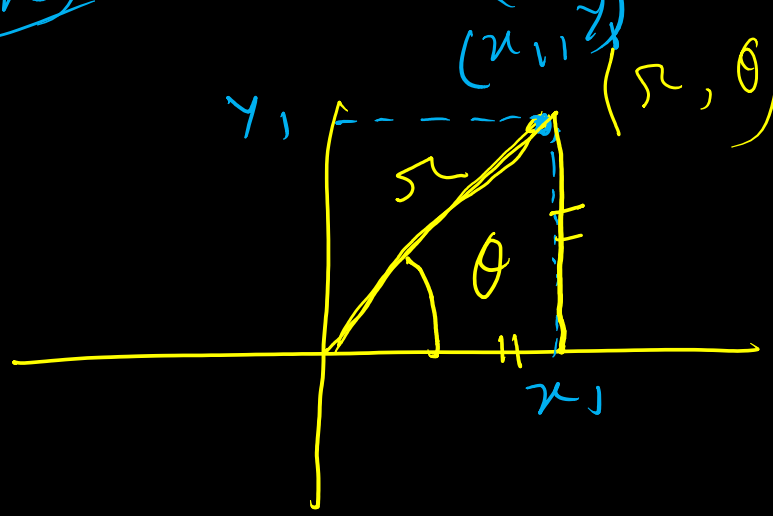
$\sqrt{(x_1-x_2)^2 + (y_1-y_2)^2}$



$(2,7)$ — $(3,x)$ — 20

$\tan = \frac{\text{লম্ব}}{\text{ভূমি}}$

$\cos\theta = \frac{x_1}{r}$



$\Rightarrow x_1 = r\cos\theta$

$r = \sqrt{x^2+y^2}$

$\tan\theta = \frac{y_1}{x_1}$

$\Rightarrow \theta = \tan^{-1}\left(\frac{y_1}{x_1}\right)$

type -1

i) $(1,0)$

$x = 1$

$y = 0$

$$r = \sqrt{x^2 + y^2}$$

$$= \sqrt{1^2 + 0^2} = 1$$

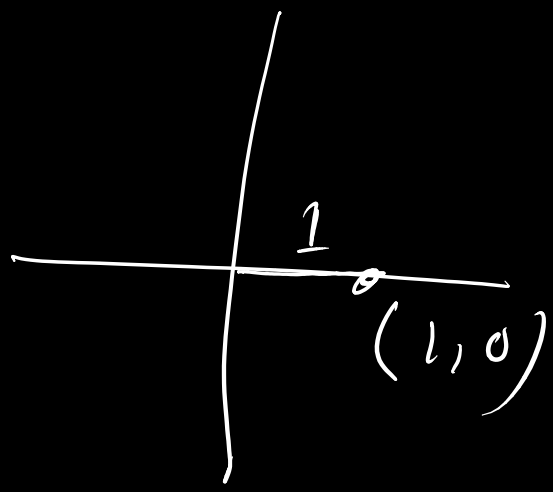
$$\theta = \tan^{-1}\left(\frac{y}{x}\right)$$

$$= \tan^{-1}\frac{0}{1}$$

$$= \tan^{-1} 0$$

$$= 0^\circ$$

$(r, \theta) = (1, 0^\circ)$



ii) $(1, -\sqrt{3})$

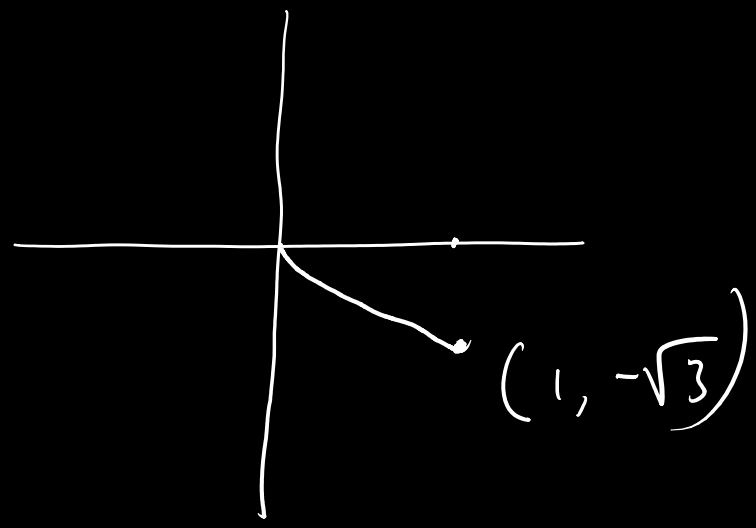
$x = 1$

$y = -\sqrt{3}$

$r = \sqrt{1^2 + (-\sqrt{3})^2}$

$= \sqrt{1 + 3}$

$= 2$



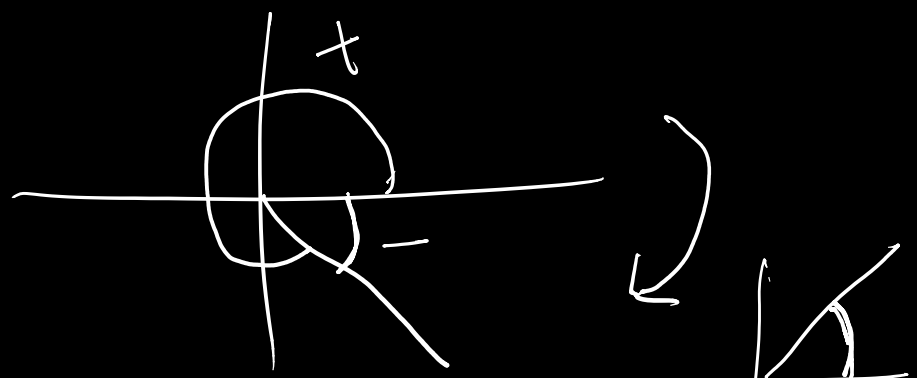
Aangle $(+, -)$

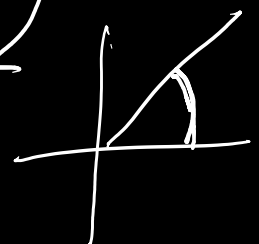
$\theta = \tan^{-1}\left(\frac{y}{x}\right)$

$= \tan^{-1}\left(\frac{-\sqrt{3}}{1}\right)$

$= \tan^{-1}(-\sqrt{3})$

$= -60$





i) $y = mx + c$

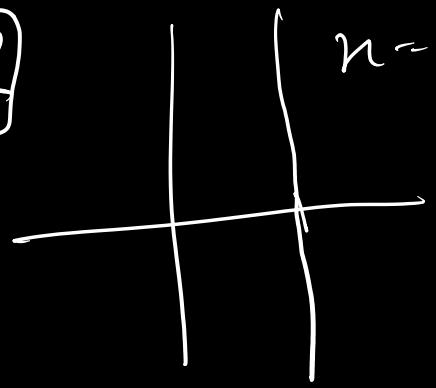
$\Rightarrow r\sin\theta = mr\cos\theta + c$

$\Rightarrow r\sin\theta - mr\cos\theta = c$

$\Rightarrow r(\sin\theta - m\cos\theta) = c$

$\Rightarrow \sin\theta - m\cos\theta = \frac{c}{r}$

$x = 2$



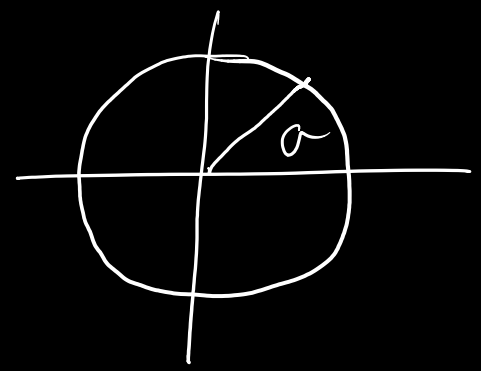
ii) $x^2 + y^2 = a^2$

$\Rightarrow r^2\cos^2\theta + r^2\sin^2\theta = a^2$

$\Rightarrow r^2(\cos^2\theta + \sin^2\theta) = a^2$

$\Rightarrow r^2 = a^2$

$\Rightarrow r = a$



11

i) $(2, -\pi/6)$

$r = 2$

$\theta = -\pi/6$

$x = r\cos\theta$

$= 2\cos\left(-\frac{\pi}{6}\right)$

$= _____$

$y = r\sin\theta$

$= 2\sin\left(-\frac{\pi}{6}\right)$

$= _____$