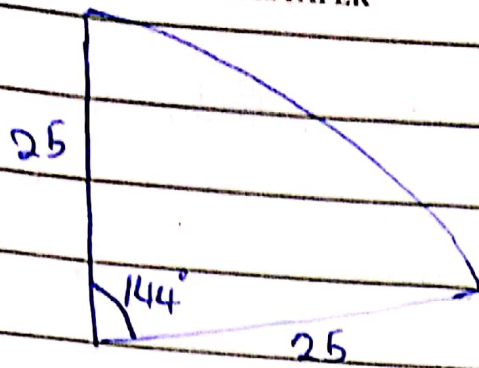




Q1

$$A = \frac{\theta}{360} \pi r^2$$

$$= \frac{144}{360} \times 25 \times 25 \times \pi$$

$$= 250\pi$$

Q

Q2

$$\frac{S_1}{D_1} = \frac{S_2}{D_2}$$

$$\frac{2.8}{726} = \frac{S_2}{5.2}$$

Q2

$$\frac{S_1}{D_1} = \frac{S_2}{D_2}$$

$$\frac{726}{2.8} = \frac{S_2}{5.2}$$

$$S_2 = \frac{726 \times 5.2}{2.8}$$

$$S_2 = 1348.29 \text{ rmp}$$

Q3.

a) Circumference of front sprocket

$$= \pi D$$

$$= 2 \times \pi \times 8 = 16\pi$$

Circumference of Rear sprocket

$$= \pi D$$

$$= 2 \times \pi \times 1.4 = 2.8\pi$$

$$\text{No. of times} = \frac{16\pi}{2.8\pi} = 5\frac{5}{7} = 5.71429 \text{ times}$$

$$= 6 \text{ times}$$

$$5\frac{5}{7} \text{ times}$$

$$(b) \frac{r_1}{s_1} = \frac{r_2}{s_2}$$

$$\frac{1.4}{s_1} = \frac{8}{35}$$

$$\therefore s_1 = \frac{35 \times 1.4}{8}$$

$$= 6.125 \text{ Revolutions per minute}$$

c) Distance covered in one hour =  $25 \times 5280$ 

$$= 132000 \text{ feet.}$$

$$\text{Distance travelled in minute} = \frac{132000}{60} = 2200 \text{ feet.}$$

$$1 \text{ revolution} = 2 \times \pi \times 1.4$$

$$= 2.8\pi \text{ inches.}$$

$$1 \text{ foot} = \frac{12 \text{ inches}}{2.8\pi}$$

$$\frac{25\pi}{12} = \frac{7}{3}\pi \text{ feet}$$

$$= 2200 \times \frac{7}{22} \times \frac{3}{\pi}$$

$$= 300 \text{ revolutions per minute}$$

$$\text{No. of revolutions per minute} = \frac{2200}{\frac{7}{3}\pi}$$

WRITE ON BOTH SIDES OF THE PAPER

CU

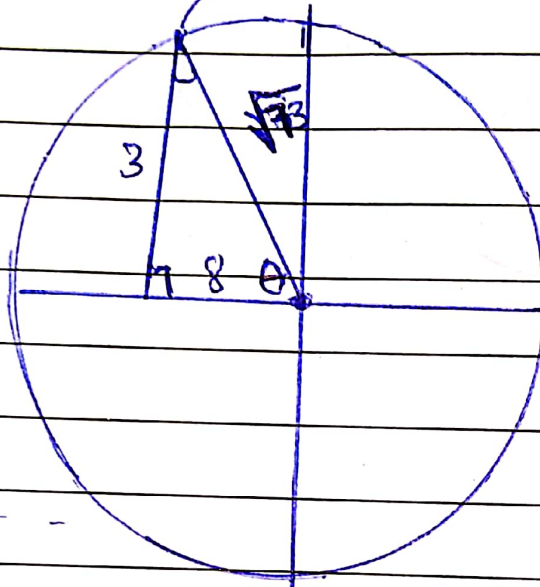
QUESTION.....

$$8x + 3y = 5$$

$$3y = 5 - 8x$$

$$y = -\frac{8}{3}x + \frac{5}{3}$$

$$\text{Slope} = -\frac{8}{3}$$



NO. 4

terminal point  $(-8, 73)$

$$\tan \theta = -\frac{3}{8}$$

$$\sin \theta = \frac{3}{\sqrt{73}} = \frac{3\sqrt{73}}{73}$$

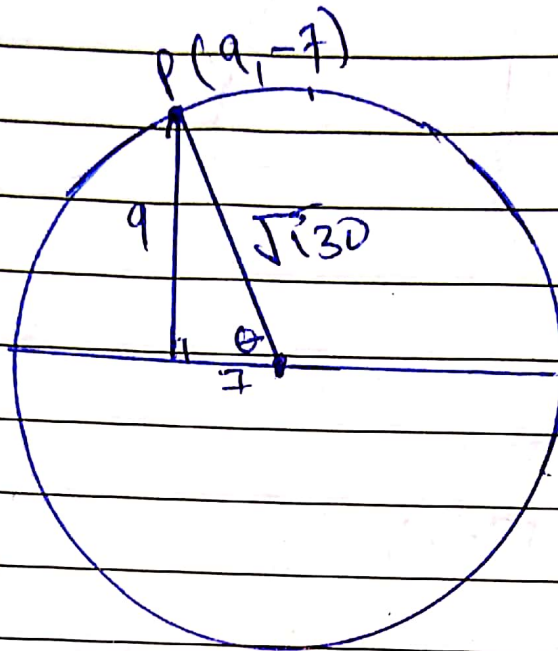
$$\cos \theta = -\frac{8}{\sqrt{73}} = -\frac{8\sqrt{73}}{73}$$

$$\cot \theta = -\frac{8}{3}$$

$$\sec \theta = -\frac{\sqrt{73}}{8}$$

$$\csc \theta = \frac{\sqrt{73}}{3}$$

Q5



$$r = \sqrt{(9-0)^2 + (-7-0)^2} = \sqrt{130}$$

$$\sin \theta = \frac{9\sqrt{130}}{130}$$

$$\cos \theta = \frac{-7\sqrt{130}}{130}$$

$$\tan \theta = \frac{-9}{7}$$

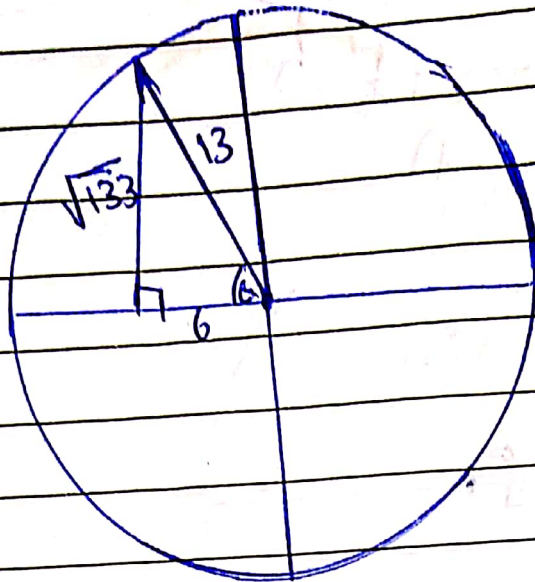
$$\cot \theta = \frac{-7}{9}$$

$$\sec \theta = \frac{-\sqrt{130}}{7}$$

$$\csc \theta = \frac{\sqrt{130}}{9}$$

Q 6

a)



terminal point =  $(-6, \sqrt{133})$

$$\sin \theta = \frac{\sqrt{133}}{13}$$

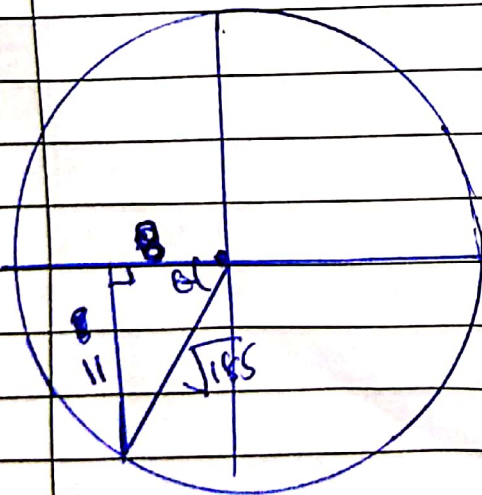
$$\tan \theta = \frac{-\sqrt{133}}{6}$$

$$\cos \theta = \frac{-6}{13}$$

$$\cot \theta = -\frac{6\sqrt{133}}{133}$$

$$\sec \theta = -\frac{13}{6}$$

b)



$$\cos \theta = \frac{8\sqrt{185}}{185}$$

$$\tan \theta = \frac{11}{8}$$

$$\cot \theta = \frac{8}{11}$$

$$\sec \theta = -\frac{\sqrt{185}}{8}$$

$$\csc \theta = -\frac{185}{11}$$

$$\sin \theta = -\frac{11\sqrt{185}}{185}$$

## EXAMINATION BOOKLET

WRITE ON BOTH SIDES OF THE PAPER

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QUESTION.....

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in either  
margin

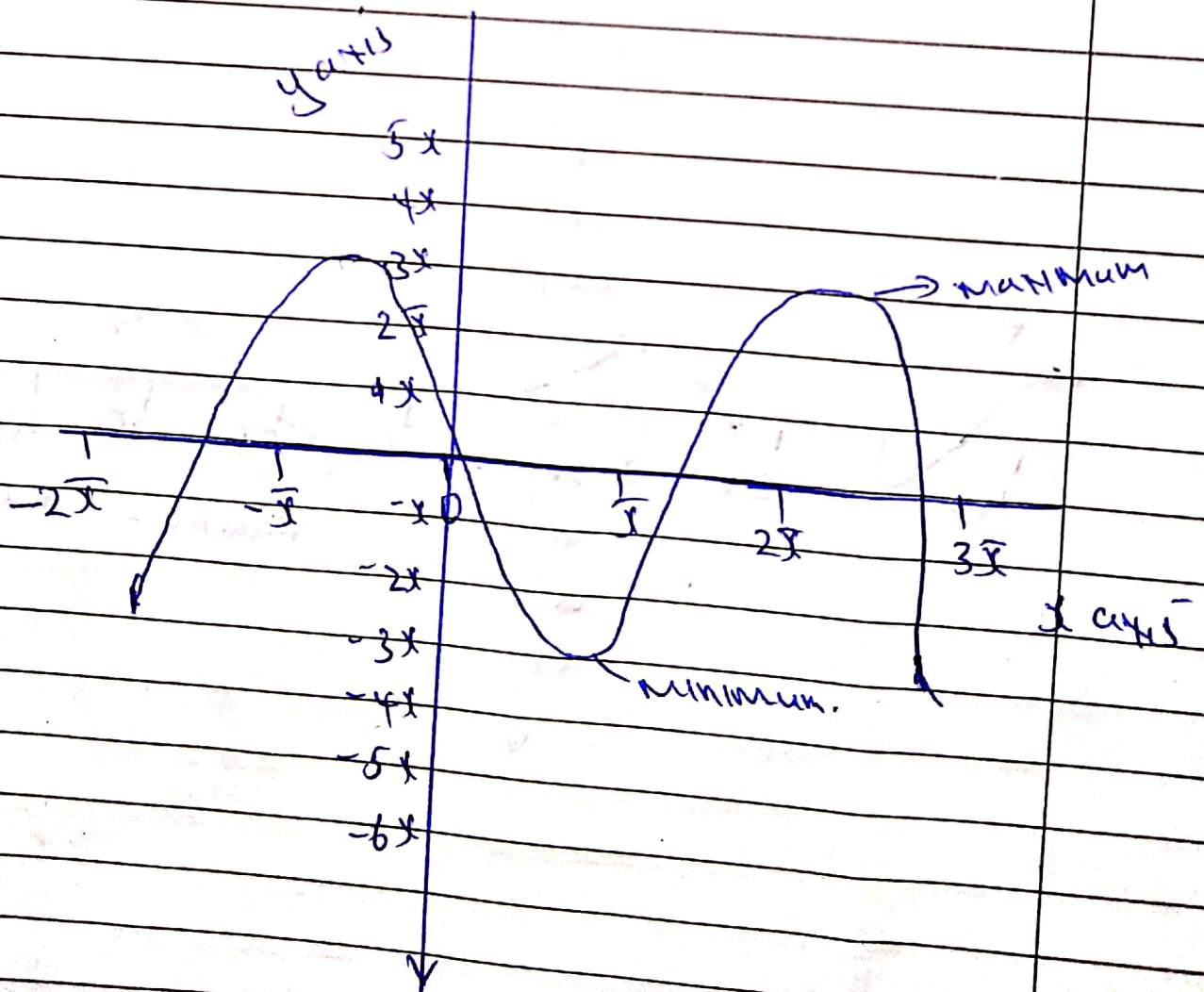
NO: 7

(a) ~~f(x)~~  $f(x) = 3 \cos\left(3x + \frac{x}{4}\right)$

period =  $\frac{2\pi}{3}$

Phase Shift =  $-\frac{x}{12} \rightarrow$  (Shift to the left  $\frac{x}{12}$ )

amplitude = 3



Do not write  
in either  
margin

EXAMINATION BOOKLET

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QUESTION.....

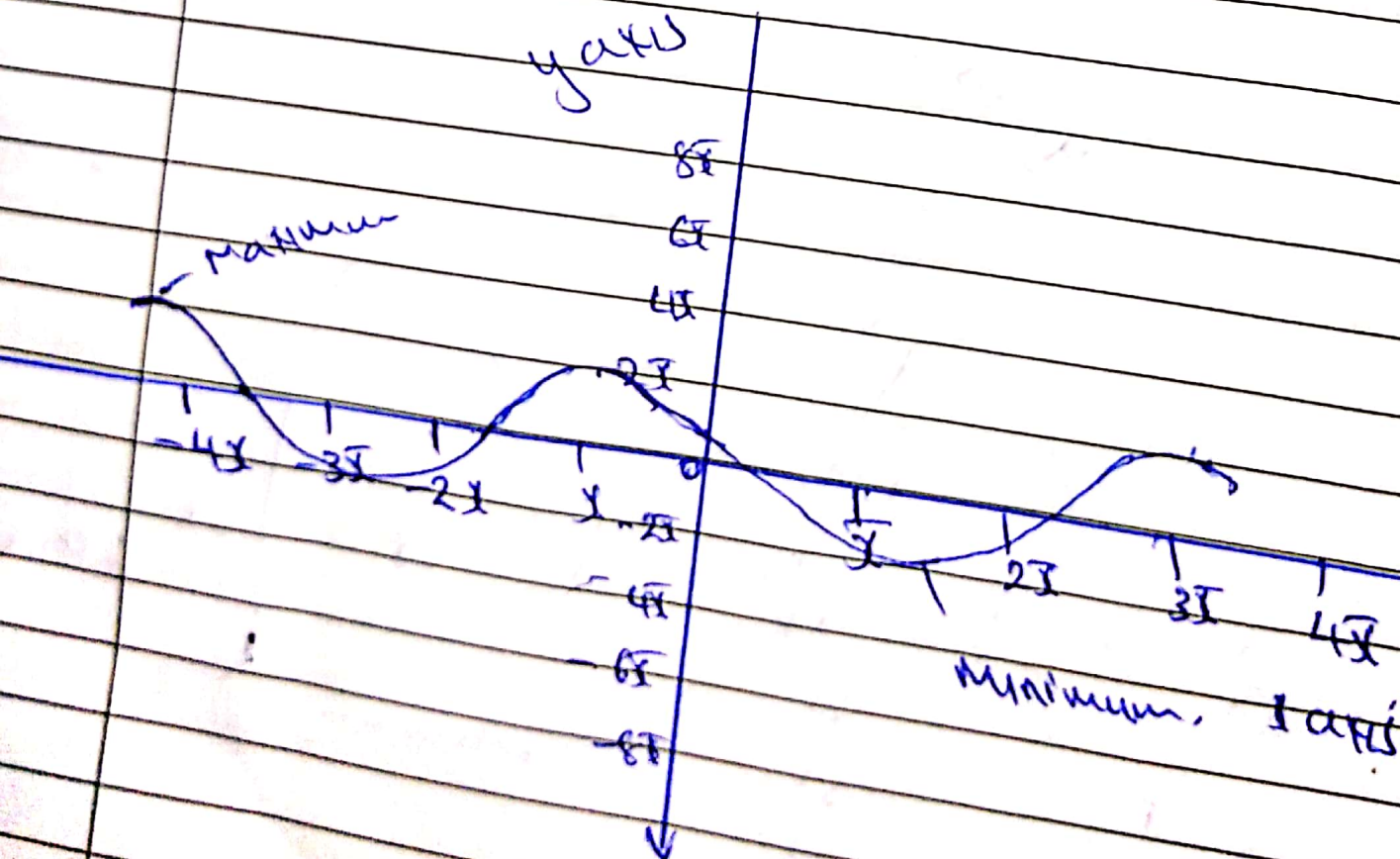
7b

$$f(x) = 2 \sin\left(-\frac{1}{2}x + \frac{\pi}{3}\right)$$

$$\text{Period} = 4\pi$$

$$\text{Amplitude} = 2$$

$$\text{Phase Shift} = \frac{2}{3}\pi \rightarrow \text{Right Shift}$$



WRITE ON BOTH SIDES OF THE PAPER

CU

QUESTION.....

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in either  
margin7  
C

$$f(x) = \cos\left(\frac{1}{3}x - \frac{\pi}{6}\right)$$

Period =  $6\pi$ 

Amplitude = 1

Phase Shift =  $\frac{\pi}{2}$ 