$180 = \pi \times 1 \times \frac{3.142}{180} = 0.01746$

$1^\circ = 0.01746$

$268 \times$

$= 268 \times 0.01746 = 4.679 \approx 4.68$

$\therefore 268^\circ = 4.68$ radians

2) Convert 155° to radians.

$1^\circ = \pi/180$

$155^\circ \times$

$= \frac{31}{155} \times \pi/\frac{180}{36} = \frac{31\pi}{36}$

$\therefore 155^\circ = \frac{31\pi}{36}$

3) Convert 5.2 radians to degrees.

$1^\circ = 0.01746$

$5.2 \times$

$= \frac{5.2 \times 1}{0.01746} = 297.8^\circ = 298^\circ$

4) Convert $\frac{5\pi}{6}$ radians to ~~the~~ degrees ~~nearest~~

$1^\circ = \frac{\pi}{180}$

$\frac{5\pi}{6}$

$\frac{5\pi}{6} \div \pi/180 = \frac{5\pi}{6} \times \frac{30}{180} = \frac{150\pi}{\pi} = 150^\circ$

$\therefore \frac{5\pi}{6} = 150^\circ$

5) $S = r\theta$

$S = 5.7\text{cm}$

$r = ?$

$\theta = \left(123^\circ \times \frac{\pi}{180}\right) = 2.1476$

$r = S/\theta \quad r = \frac{5.7}{2.1476} = 2.65$

$\therefore r = 2.65\text{cm}$

10) a) $y = \cos \frac{3\pi}{5} x$.

$y = A \cos(Bx + C)$.

Period of a function $= \frac{2\pi}{|B|}$

B is the function of x.

$|B| = \frac{3\pi}{5}$

Period (P) $= 2\pi \div \frac{3\pi}{5}$

$= 2\pi \times \frac{5}{3\pi} = \frac{10\pi}{3\pi} = 10/3 = 3.33$

$P = 3.33$

b) $y = \tan \frac{5\pi}{3} x$

Period (P) of a tangent function $= \frac{\pi}{|B|}$

$|B| = \frac{5\pi}{3}$

$\therefore P = \pi \div \frac{5\pi}{3} = \pi \times 3/5\pi = 3/5$.

$P = 3/5$.

c) $y = \sin 3/2 x$

Period P $= \frac{2\pi}{|B|}$

$|B| = 3/2$.

$\therefore P = 2\pi \div 3/2 = 2\pi \times 2/3 = \frac{4\pi}{3}$

$\therefore P = \frac{4\pi}{3}$

180 = 0.17 $1 \times \frac{3.142}{180} = 0.01746$

$1^\circ = 0.01746$

$268 \times$

$= 268 \times 0.01746 = 4.679 \approx 4.68$

$\therefore 268^\circ = 4.68$ radians

2) Convert 155° to radians.

$1^\circ = \pi/180$

$155^\circ \times$

$= \frac{31}{155} \times \pi/\frac{180}{36} = \frac{31\pi}{36}$

$\therefore 155^\circ = \frac{31\pi}{36}$.

3). Convert 5.2 radians to degrees.

$1^\circ = 0.01746$

$5.2 \times$

$= \frac{5.2 \times 1}{0.01746} = 297.8^\circ = 298^\circ$

4) Convert $\frac{5\pi}{6}$ radians to ~~the~~ ~~nearest~~ degrees

$1^\circ = \frac{\pi}{180}$

$\frac{5\pi}{6}$

$\frac{5\pi}{6} \div \pi/180 = \frac{5\pi}{6_1} \times \frac{30}{\frac{180}{\pi}} = \frac{150\pi}{\pi} = 150^\circ$

$\therefore \frac{5\pi}{6} = 150^\circ$

5) $S = r\theta$

$S = 5.7$ cm

$r = ?$

$\theta = \left(123^\circ \times \frac{\pi}{180}\right) = 2.1476$.

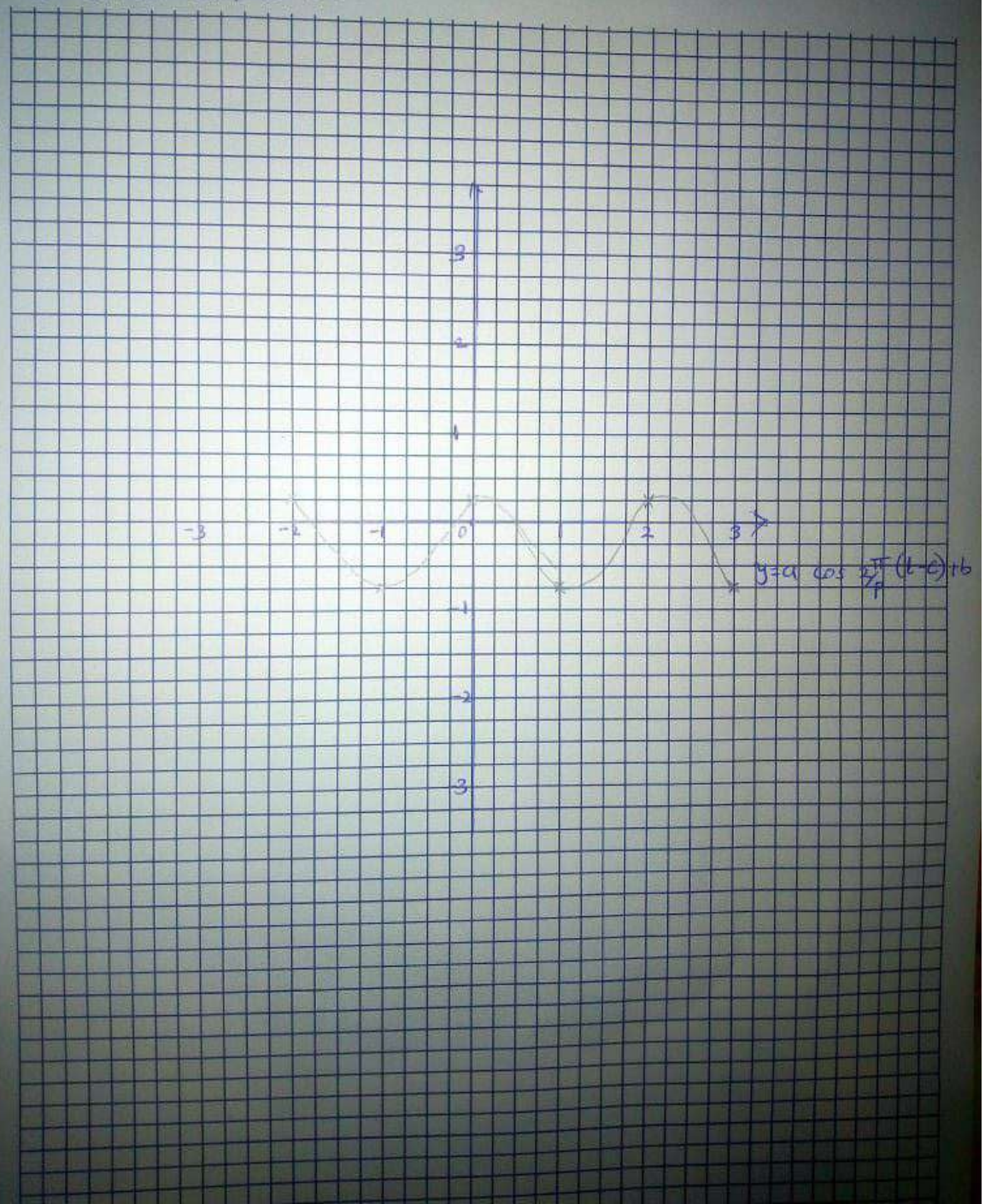
$r = S/\theta$ $\quad r = \frac{5.7}{2.1476} = 2.65$

$\therefore r = 2.65$ cm

16. $y = a \cos \frac{2}{p}\pi (t-c) + b$

a = amplitude.

b = Vertical displacement.

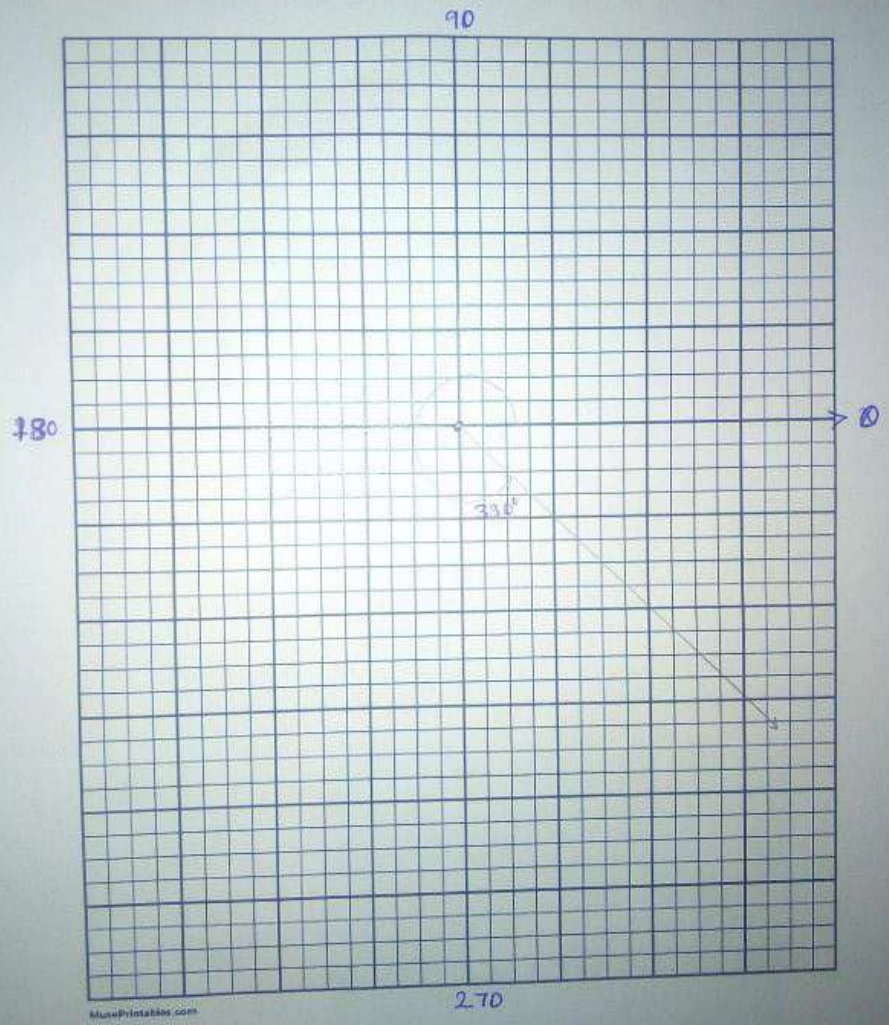


6. $\frac{11\pi}{6}$

$1^\circ = \pi/180$

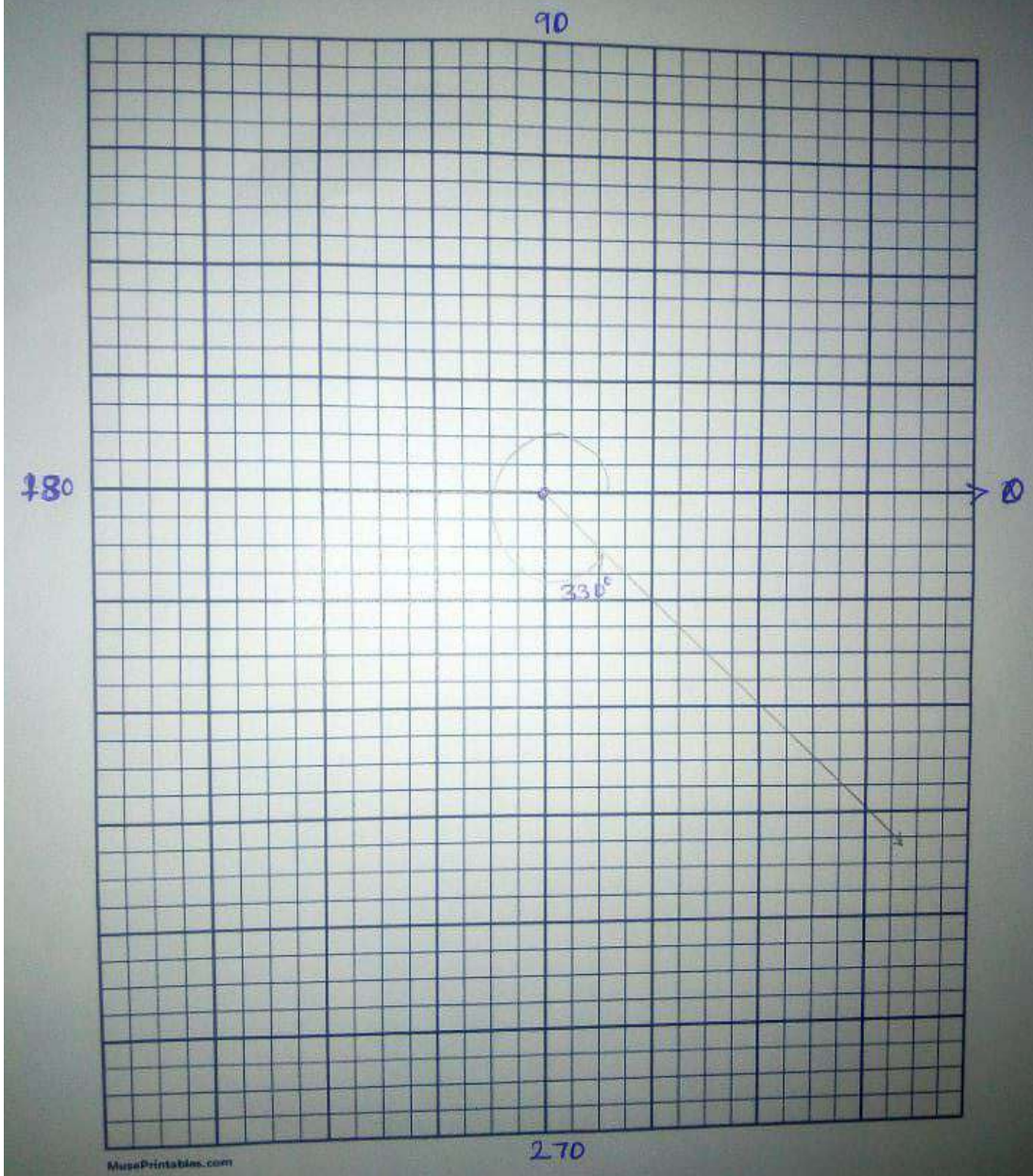
$\times \frac{11\pi}{6}$

$= \frac{11\pi}{6} \div \frac{\pi}{180} = \frac{11\pi}{6_1} \times \frac{30}{\pi} = 330^\circ$.



The reference angle is 30°

The coterminal angle is $360 - 330 = 30^\circ$.



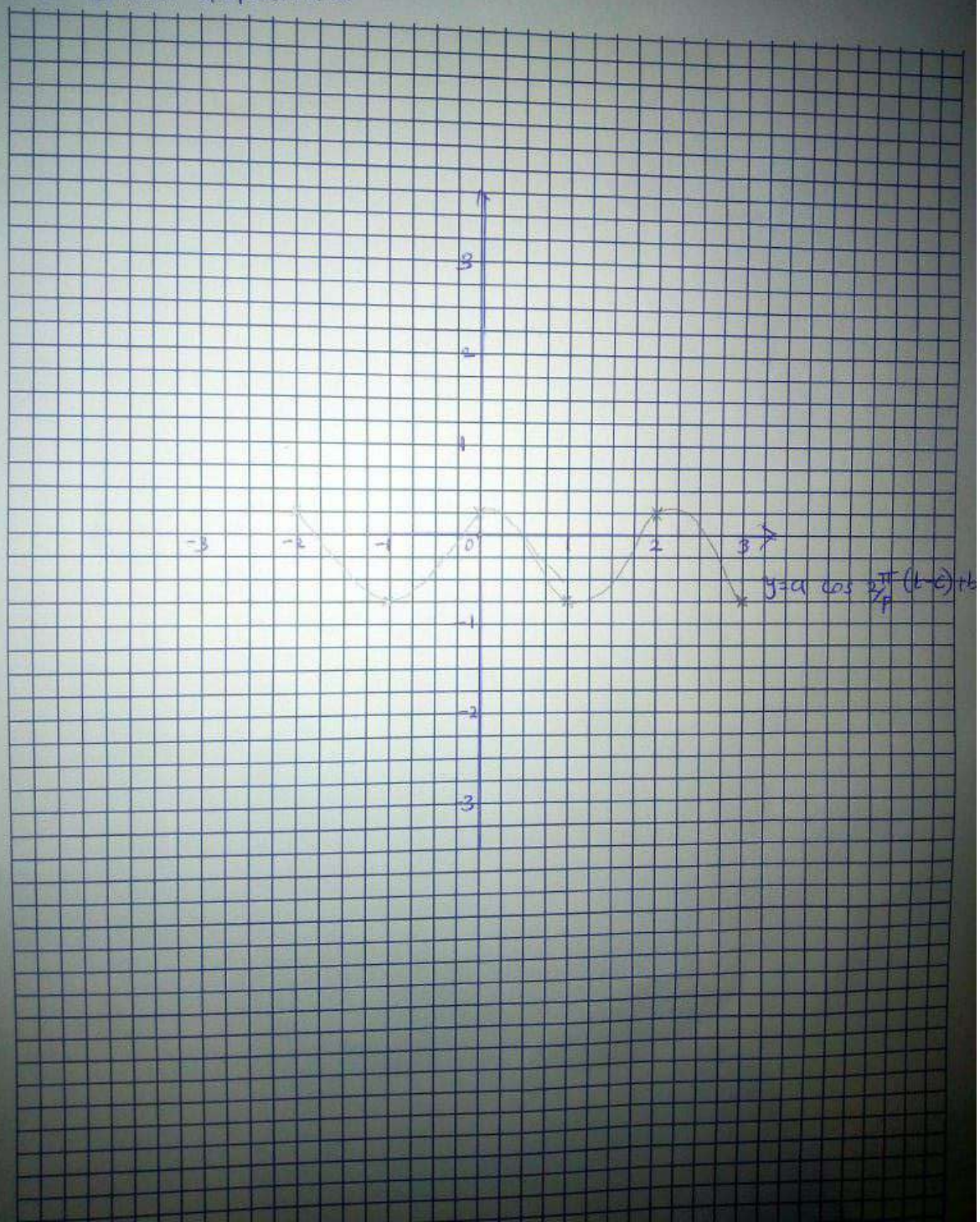
The reference angle is $30°$

The coterminal angle is $360 - 330 = 30°$

16. $y = a \cos \frac{2\pi}{p}(t-c) + b$

a = amplitude.

b = Vertical displacement.



13.

$y = A \sin(Bx + C) + D$

$C = -\pi$

$b = 0$

$A = 5$

$B = \frac{2\pi}{B} = \pi$

$\frac{2\pi}{\pi} = \frac{B\pi}{\pi}$

$B = 2$

$\therefore y = 5 \sin(2x - \pi)$

14 $A = 4$

$B = -6.$

$C = \frac{-2\pi}{3} - \frac{2\pi}{3}$

$D = -2$

$\frac{2\pi}{B} = -\frac{\pi}{3}.$

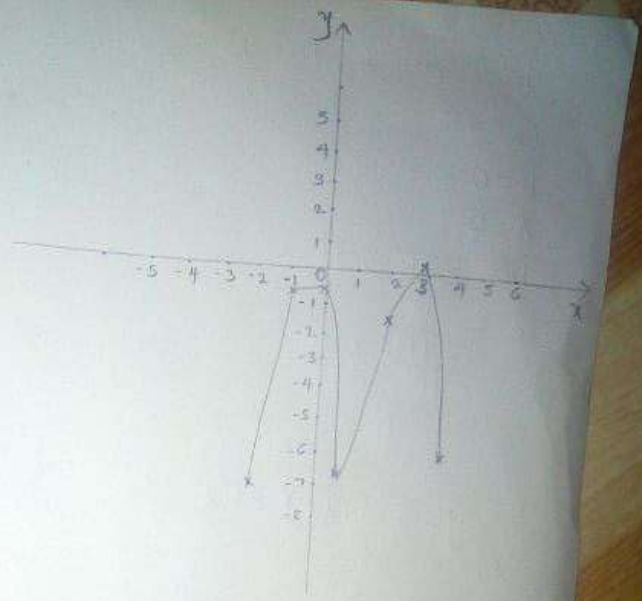
$\frac{6\pi}{-\pi} = \frac{-\pi B}{-\pi}$

$-6 = b$

$\therefore y = 4 \cos(-6x - \frac{2\pi}{3}) - 2$

11) $y = 4 \sin 2(x-5) - 3$

x	y
-2	-7
-1	-0.84
0	-0.84
1	-6.96
2	-1.88
3	0.04
4	~~-6.96~~ -6.64



Domain = $(-\infty, \infty)$

Range = $(-\infty, \infty)$

12) $y = -3 \cos\left(2x + \pi/3\right) + 5$, determine;

amplitude

$y = a \cos(bx + c) + d$

a is the amplitude

∴ In our function our amplitude = ~~-3 or~~ 3

period

~~Period (P) = $\frac{2\pi}{|b|}$ $\frac{2\pi}{|2|}$ = 2 |b| = 2~~ Period (P) = $\frac{2\pi}{|b|}$, $|b| = 2$

∴ $\frac{2\pi}{2} = P = \pi$

$P = \pi$

Phase shift

Phase shift = $C/b = \pi/3 \div 2 = \pi/3 \times 1/2 = \pi/6$

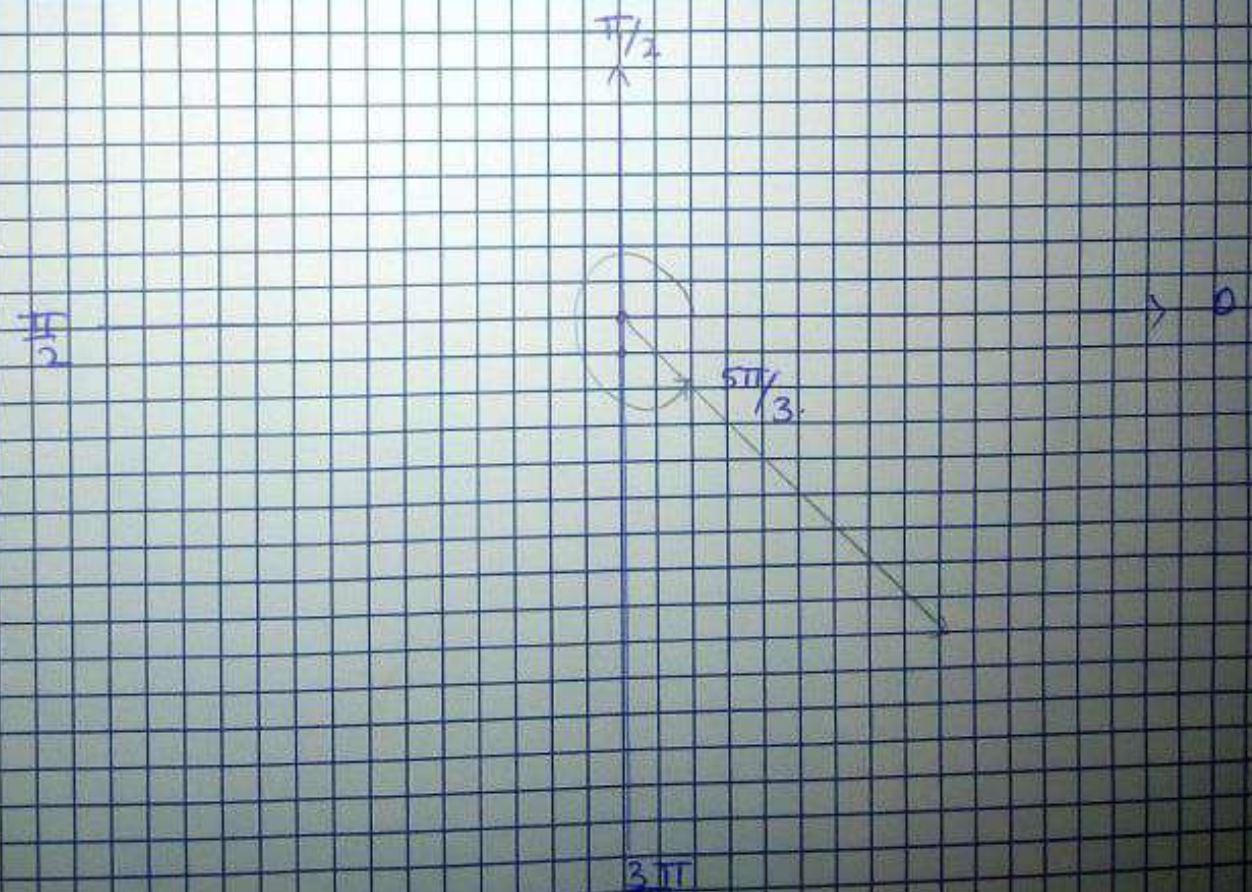
∴ Phase shift = $\pi/6$

Vertical displacement

The vertical displacement = $d = 5$

9. c) $\sec \frac{5\pi}{3}$

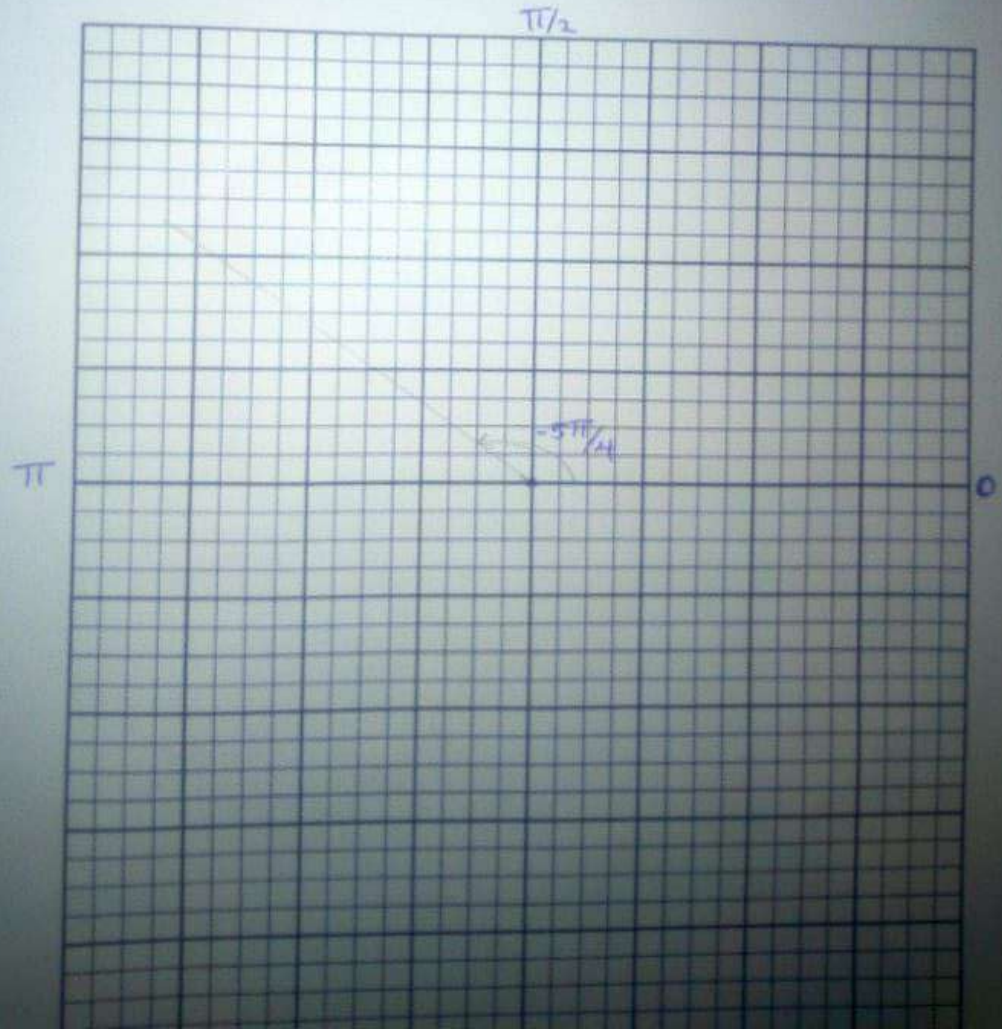
$\cos\left(\frac{\pi}{3}\right) = \frac{1}{2}$ $\sec\left(\frac{\pi}{3}\right) = 2$



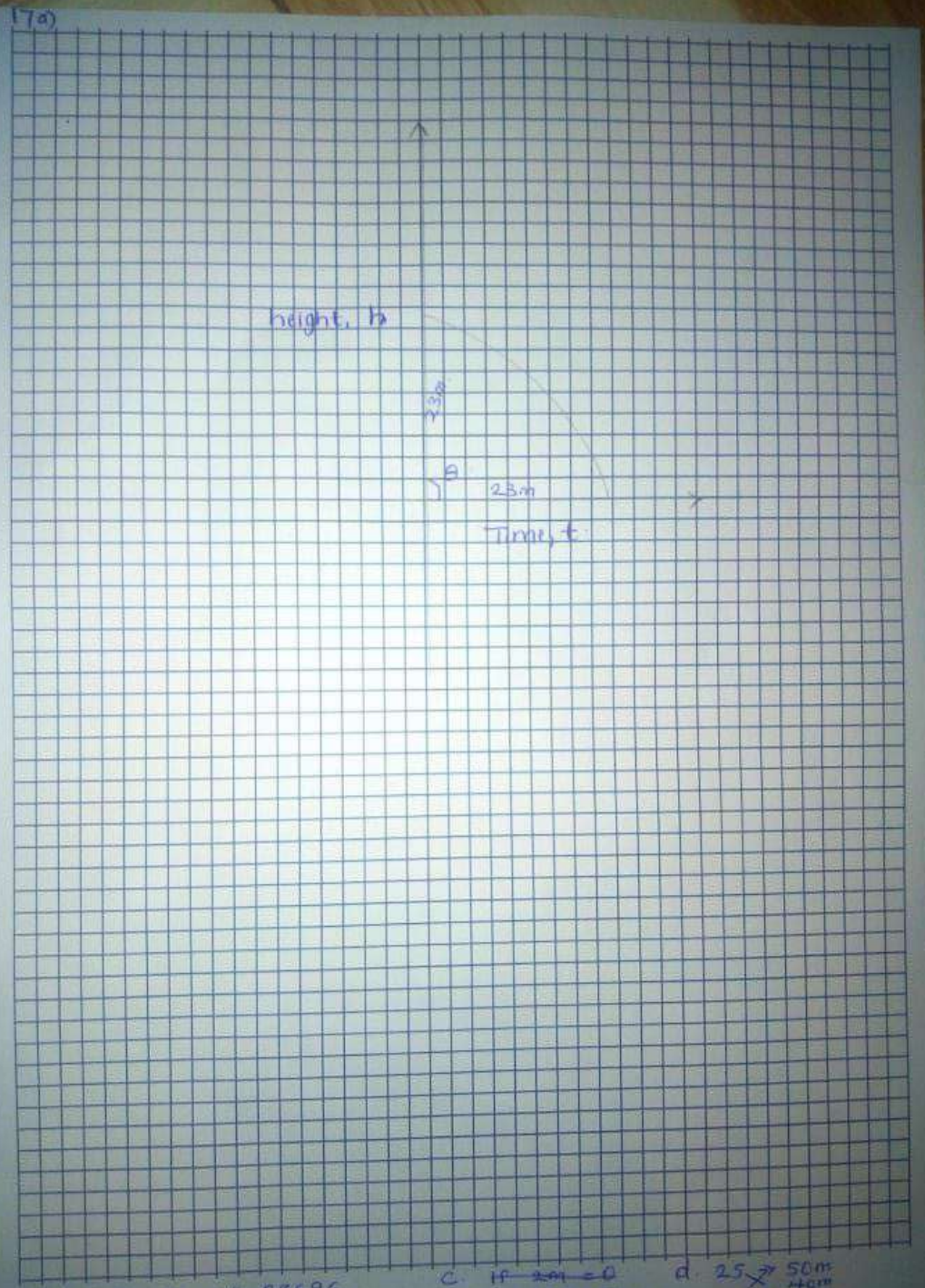
9b) $\cos\left(-\frac{5\pi}{4}\right)$

$1^c = \pi/180$

$-\frac{5\pi}{4}$



17a)



b) $\sin\theta = 2/23 = 0.08696$

$\sin^{-1} 0.08696 = 4.99°$

c. ~~If 2m = 0~~

$2m \times 25 = 50$

$= 50m$.

d. $25 \rightarrow 50m$

$40m$

$= \frac{25 \times 40}{50} = 20sec.$

8) In the third quadrant, sine theta is negative while tan θ is positive. Thus, sin θ < 0 and tan θ > 0

7) $\sin\theta = -7/25 = -0.28$

$\sin^{-1} = -16.26°$

$360 - 16.26 = 343.74°$.

∴ The possible co-ordinate on the terminal arm of angle θ is 16.26°.

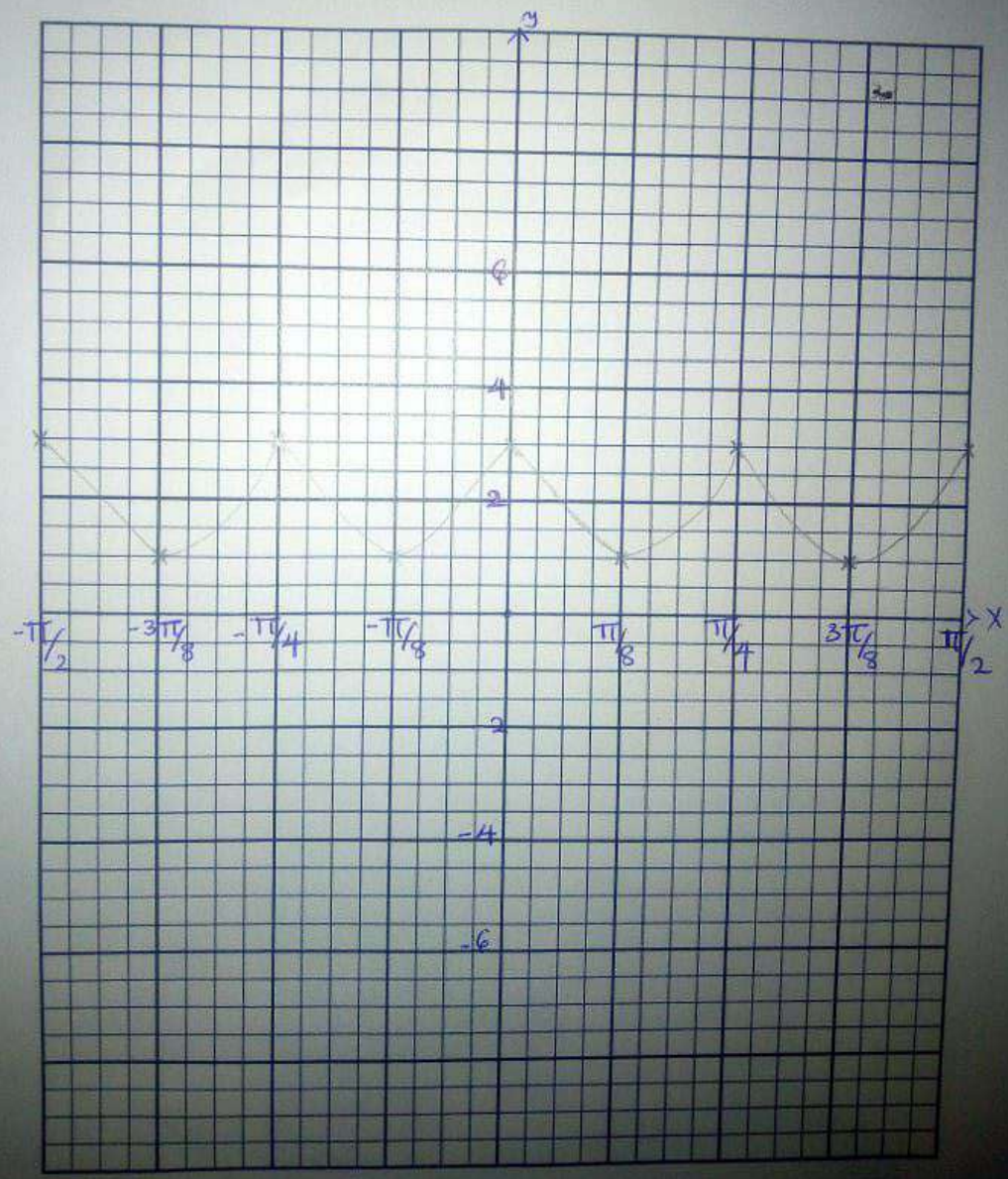
5. b.) $y = -2\cos(4x - \pi/2) + 3$

Period (p) $= \frac{2\pi}{|B|} = \frac{2\pi}{4} = \pi/2$.

Critical point $= \frac{2\pi}{4} \neq \pi/2$ $\pi/2 \div 4 = \pi/8$

Amplitude $= -2$

Vertical displacement $= 3$.



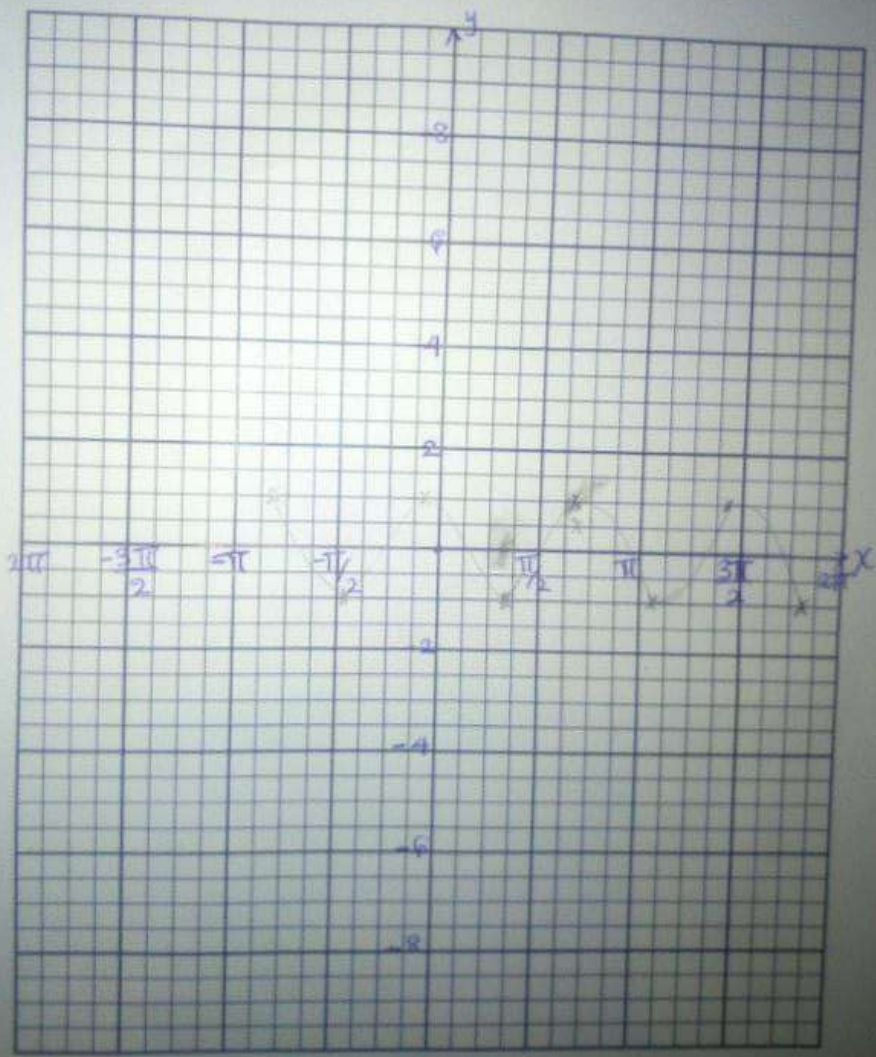
15. a) $y = \sin(x + \pi/8) - 1$

Midpoint = -1

Period (p) $= \frac{2\pi}{|b|} = \frac{2\pi}{1} = 2\pi$

Critical points $= \frac{2\pi}{4} = \pi/2$

Amplitude $= 1$ & -1

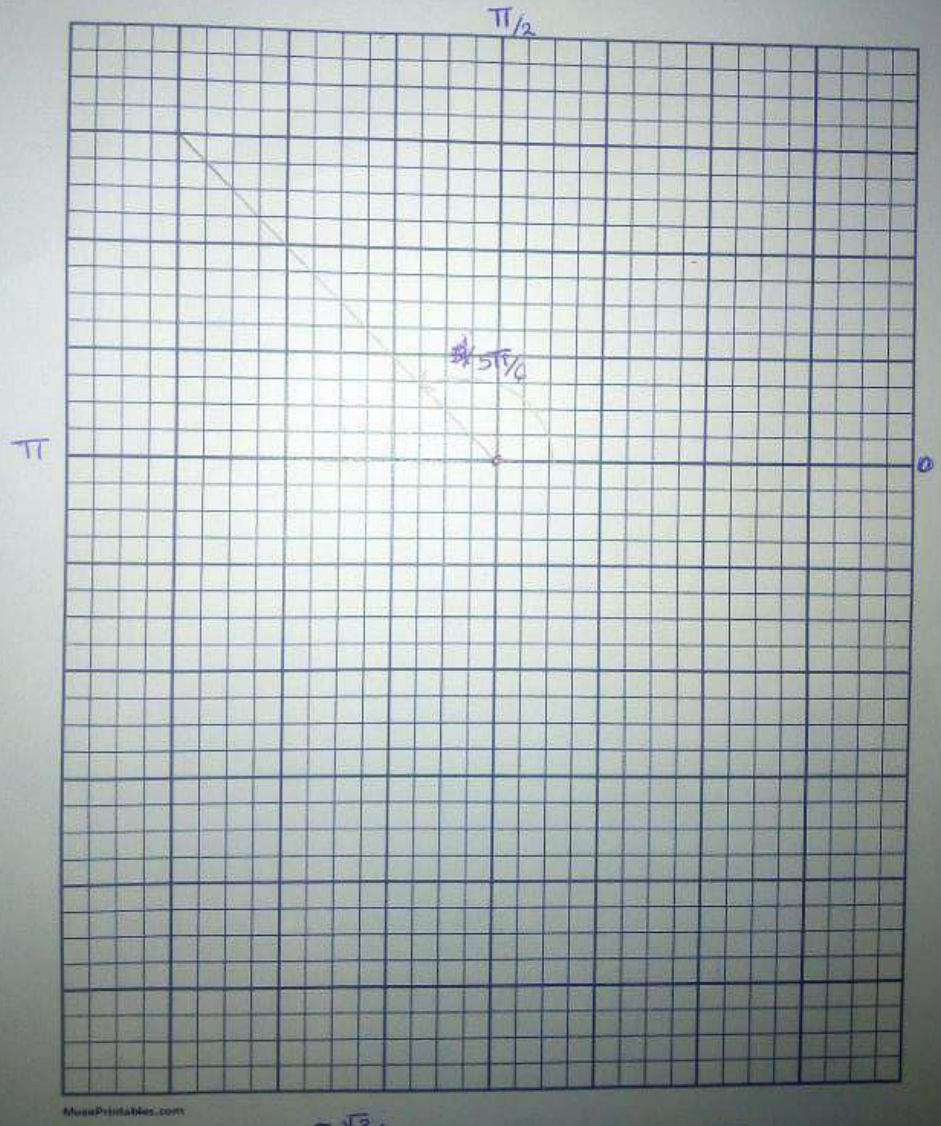


9. a) $\cot \frac{5\pi}{6}$

$\cot \frac{5\pi}{6} = \frac{\cos\left(\frac{5\pi}{6}\right)}{\sin\left(\frac{5\pi}{6}\right)}$

$\cos\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}$

$\sin\left(\frac{\pi}{6}\right) = \frac{1}{2}$



MusePrintables.com

$\frac{-\sqrt{3}/2}{1/2} = -\frac{\sqrt{3}}{2} \times \frac{2}{1} = -\sqrt{3}$

15. a) $y = \sin(x + \pi/3) - 1$

Midpoint $= -1$

Period $(p) = \frac{2\pi}{|B|} = \frac{2\pi}{1} = 2\pi$

Critical points $= \frac{2\pi}{4} = \pi/2$

Amplitude $= 1$ ≠ -1