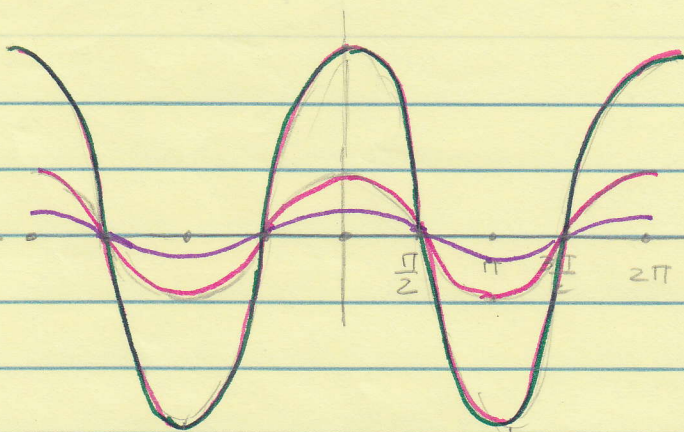


p305

①  $y = \cos x$

0	$\frac{\pi}{2}$	$\pi$	$\frac{3\pi}{2}$	$2\pi$
1	0	-1	0	1



$y = 3 \cos x$

Amp = 3

$B = 1 \rightarrow \text{per} = 2\pi$

Scale =  $\frac{2\pi}{4} = \frac{\pi}{2}$

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

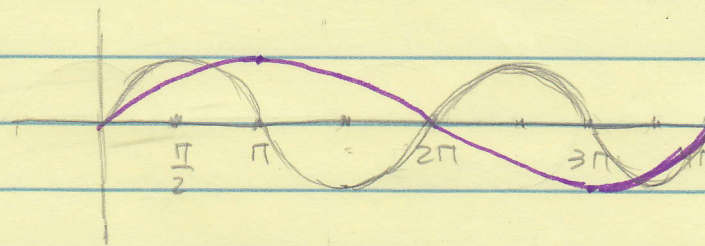
Amp = 3

$B = 1 \rightarrow \text{per} = 2\pi$

Scale:  $\frac{2\pi}{4} = \frac{\pi}{2}$

3  $y = 8 \sin x$

0	$\frac{\pi}{2}$	$\pi$	$\frac{3\pi}{2}$	$2\pi$
0	1	0	-1	0



$y = 8 \sin \frac{1}{2} x$

$B = \frac{1}{2}$

Per:  $\frac{2\pi}{B} = 2\pi \cdot 2 = 4\pi$

Scale =  $\frac{4\pi}{4} = \pi$

5.  $y = 2 \sin 3x$

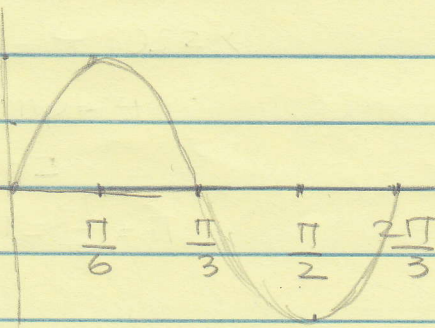
Amplitude = 2

$B = 3$

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

Scale =  $\frac{2\pi}{3} \div 4$

$= \frac{2\pi}{3} \cdot \frac{1}{4} = \frac{\pi}{6}$



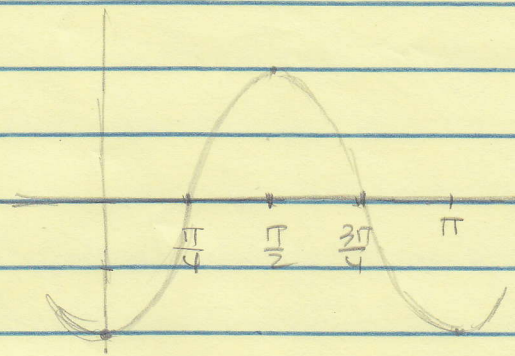
7.  $y = -2 \cos 2t$

Amplitude = 2

$B = 2$

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

Scale =  $\frac{\pi}{4}$



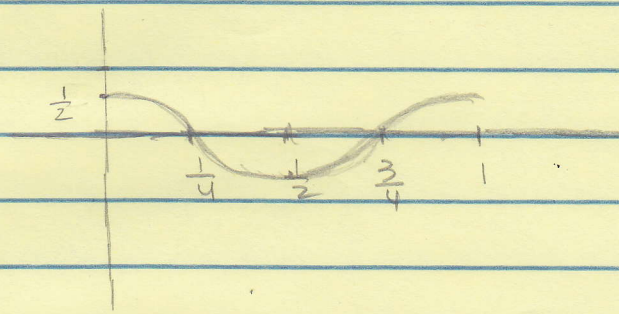
9.  $y = \frac{1}{2} \cos 2\pi t$

Amp =  $\frac{1}{2}$

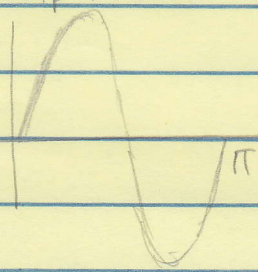
$B = 2\pi$

Per =  $\frac{2\pi}{2\pi} = 1$

Scale =  $\frac{1}{4}$



11. Amplitude: 4



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

$\frac{\pi}{1} = \frac{2\pi}{B}$

$B\pi = 2\pi$

$B = 2$

$y = 4 \sin 2x$

12. Amplitude: 2

Per =  $24\pi = \frac{2\pi}{B}$

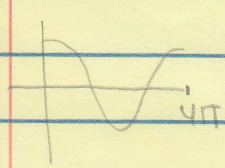
$\frac{24\pi}{1} = \frac{2\pi}{B}$

$24\pi B = 2\pi$

$B = \frac{1}{12}$

$y = 2 \cos \frac{1}{12} x$

13. Amp = 3



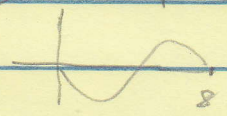
Per =  $4\pi = \frac{2\pi}{B}$

$4\pi B = 2\pi$

$B = \frac{1}{2}$

$y = 3 \cos \frac{1}{2} x$

14. Amp = 2

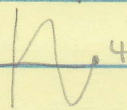


Per =  $8 = \frac{2\pi}{B}$

$8B = 2\pi \rightarrow B = \frac{\pi}{4}$

$y = 2 \sin \frac{\pi}{4} x$

15 Amp = 3

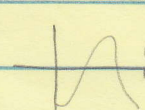


$$\text{Per} = 4 = \frac{2\pi}{B}$$

$$4B = 2\pi \rightarrow B = \frac{\pi}{2}$$

$$y = 3 \sin \frac{\pi}{2} x$$

16 Amp = 5



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

$$2B = 2\pi \rightarrow B = \pi$$

$$y = -5 \cos \pi x$$

w/s

①  $\sin x = \frac{\sqrt{3}}{2}$

Q I:  $x = 60^\circ + n \cdot 360^\circ$

Q II:  $x = 120^\circ + n \cdot 360^\circ$

$n=0$   $x = 60^\circ$

$x = 120^\circ$

$n=1$   $> 360^\circ$

$> 360^\circ$

②  $\sin 3x = \frac{\sqrt{3}}{2}$

Q I:  $3x = 60^\circ + n \cdot 360^\circ$

Q II:  $3x = 120^\circ + n \cdot 360^\circ$

$x = 20^\circ + n \cdot 120^\circ$

$x = 40^\circ + n \cdot 120^\circ$

$n=0$   $x = 20^\circ$

$x = 40^\circ$

$n=1$   $x = 20^\circ + 120^\circ = 140^\circ$

$x = 40^\circ + 120^\circ = 160^\circ$

$n=2$   $x = 20^\circ + 240^\circ = 260^\circ$

$x = 40^\circ + 240^\circ = 280^\circ$

$n=3$   $x = 20^\circ + 360^\circ$

$$20^\circ; 40^\circ; 140^\circ; 160^\circ; 260^\circ; 280^\circ$$

3  $\sin \frac{x}{3} = \frac{\sqrt{3}}{2}$

Q I:  $\frac{x}{3} = 60^\circ + n \cdot 360^\circ$

Q II:  $\frac{x}{3} = 120^\circ + n \cdot 360^\circ$

$x = 180^\circ + n \cdot 1080^\circ$

$x = 360^\circ + n \cdot 1080^\circ$

$180^\circ; \cancel{360^\circ}$

Since the domain is  $0 \leq x < 360^\circ$ ; it doesn't include  $360^\circ$ .

Final answer  $180^\circ$

4  $\cos x = -\frac{1}{2}$

Q II:  $x = 120^\circ + n \cdot 360^\circ$

Q III:  $x = 240^\circ + n \cdot 360^\circ$

$120^\circ; 240^\circ$

5  $\cos 3x = -\frac{1}{2}$

Q II:  $3x = 120^\circ + n \cdot 360^\circ$

Q III:  $3x = 240^\circ + n \cdot 360^\circ$

$x = 40^\circ + n \cdot 120^\circ$

$x = 80^\circ + n \cdot 120^\circ$

$n=0$

$x = 40^\circ$

$x = 80^\circ$

$n=1$

$x = 40^\circ + 120^\circ = 160^\circ$

$x = 80^\circ + 120^\circ = 200^\circ$

$n=2$

$x = 40^\circ + 240^\circ = 280^\circ$

$x = 80^\circ + 240^\circ = 320^\circ$

$n=3$

$x = 40^\circ + 360^\circ$

 ~~$x = 400^\circ$~~ 

$40^\circ; 80^\circ; 160^\circ; 200^\circ; 280^\circ; 320^\circ$

6  $\cos \frac{1}{3}x = -\frac{1}{2}$

Q II:  $\frac{1}{3}x = 120^\circ + n \cdot 360^\circ$

Q III:  $\frac{1}{3}x = 240^\circ + n \cdot 360^\circ$

$x = 360^\circ + n \cdot 1080^\circ$

$x = 720^\circ + n \cdot 1080^\circ$

$360^\circ$

since the domain is  $0 \leq x < 360^\circ$  $360^\circ$  is not in the domain $\rightarrow$  no solution

7

$\tan x = -1$

Q II:  $\frac{3\pi}{4}$

Q IV:  $\frac{7\pi}{4}$

8

$\tan 2x = -1$

$2x = \frac{3\pi}{4} + 2n\pi$

$2x = \frac{7\pi}{4} + 2n\pi$

$x = \frac{3\pi}{8} + n\pi$

$x = \frac{7\pi}{8} + n\pi$

$n=0$

$x = \frac{3\pi}{8}$

$x = \frac{7\pi}{8}$

$n=1$

$x = \frac{3\pi}{8} + \frac{\pi}{8} = \frac{4\pi}{8}$

$x = \frac{7\pi}{8} + \frac{\pi}{8} = \frac{8\pi}{8}$

$n=2$

$x = \frac{3\pi}{8} + 2\pi$  not in domain

$x = \frac{7\pi}{8} + 2\pi$  too big

9  $\tan \frac{1}{2}x = -1$

$$\frac{1}{2}x = \frac{3\pi}{4} + 2n\pi$$

$$x = \frac{3\pi}{2} + 4n\pi$$

$$\frac{1}{2}x = \frac{7\pi}{4} + 2n\pi$$

$$x = \frac{7\pi}{2} + 4n\pi$$

$n=0$   $x = \frac{3\pi}{2}$

$> 2\pi$

$n=1$   $x = \frac{3\pi}{2} + 4\pi = \frac{11\pi}{2}$  too big

p299 WE

8  $48\sin\theta = 3$

$$\sin\theta = \frac{3}{4}$$

Q I:  $\theta = \sin^{-1}\left(\frac{3}{4}\right) \approx 48.6^\circ$

Q II:  $\theta = 180^\circ - \sin^{-1}\left(\frac{3}{4}\right) \approx 131.4^\circ$

(14)  $\sec x = 2.5 = \frac{5}{2}$

$$\cos x = \frac{2}{5}$$

Q I:  $x = \cos^{-1}\left(\frac{2}{5}\right)$

$\approx 1.16$

Q II:  $x = 2\pi - \cos^{-1}\left(\frac{2}{5}\right)$

$\approx 5.12$

24 inclination  $= 158^\circ$

$$m = \tan 158^\circ \approx -0.40$$

$$y - 5 = -0.40(x + 3)$$

$$y = -0.40x + 3.80$$

26  $x - 4y = 7$

$$4y = x - 7$$

$$y = \frac{1}{4}x - \frac{7}{4} \rightarrow m = \frac{1}{4} \text{ acute}$$

$$\theta = \tan^{-1}\left(\frac{1}{4}\right) \approx 14^\circ$$