

State the amplitude and period for each function. Then graph each function

1. $y = 4\cos 2\theta$

Amp = 4

period = π

2. $y = 0.5 \sin 4\theta$

Amp = 0.5

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

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

3. $y = -\frac{1}{3} \cos \frac{\theta}{2}$

Amp = $\frac{1}{3}$

period = 4π

4. $y = 0.5 \sin \frac{\theta}{6}$

Amp = 0.5

period = 12π

State the amplitude, period, phase shift and vertical shift for each function. Then graph each function on a separate sheet of graph paper.

5. $y = 5 - 4\sin(2\theta - \pi)$ $\frac{2\pi}{2}$

Amp = 4

period = π

VS = 5

PS = $\pi/2$

7. $y = \sin\left(\frac{\theta}{2} + \frac{\pi}{2}\right) - 9$

Amp = 1

period = 4π

VS = -9

PS = $\frac{-\pi}{2} = -\pi$

9. $y = 2\sin(2\theta + \pi) - 5$

Amp = 2

period = π

VS = -5

PS = $-\frac{\pi}{2}$

6. $y = 2\cos(\theta + 2\pi) + 1$

Amp = 2

period = 2π

VS = 1

PS = -2π

8. $y = 4 + 3\cos\left(\frac{\theta}{4} - \frac{\pi}{4}\right)$

Amp = 3

period = 8π

VS = 4

PS = $\frac{\pi/4}{1/4} = \pi$

10. $y = 4\cos\left(\frac{\theta}{2} + \pi\right) - 6$

Amp = 4

period = 4π

PS = -2π

VS = -6

11. Write an equation of a cosine function with amplitude 1.5 and period 5π .

$$y = \pm 1.5 \cos \frac{2}{5}\theta$$

$$\frac{2\pi}{k} = 5\pi \quad 5\pi k = 2\pi \quad k = \frac{2}{5}$$

12. Write an equation of a sine function with amplitude $\frac{2}{3}$ and period 6.

$$y = \pm \frac{2}{3} \sin \frac{\pi}{3}\theta$$

$$\frac{2\pi}{k} = 6 \quad 6k = 2\pi \quad k = \frac{\pi}{3}$$

13. Write an equation of a sine function with amplitude 4, period $\frac{\pi}{2}$, phase shift -2π , and vertical shift -1 .

$$y = \pm 4 \sin(4\theta + 8\pi) - 1$$

$$\frac{c}{4} = -2\pi \quad c = -8\pi$$

$$\frac{2\pi}{k} = \frac{\pi}{2} \quad \pi k = 4\pi \quad k = 4$$

14. Write an equation of a sine function with amplitude 0.5, period π , phase shift $\frac{\pi}{3}$, and vertical shift 3.

$$y = \pm 0.5 \sin\left(2\theta - \frac{2\pi}{3}\right) + 3$$

$$\frac{c}{2} = \frac{\pi}{3} \quad c = \frac{2\pi}{3}$$

$$\frac{2\pi}{k} = \pi \quad k\pi = 2\pi \quad k = 2$$

15. Write an equation of a cosine function with amplitude $\frac{3}{4}$, period $\frac{\pi}{4}$, phase shift 0, and vertical shift 5.

$$y = \pm \frac{3}{4} \cos(8\theta - 0) + 5$$

OR

$$y = \pm \frac{3}{4} \cos 8\theta + 5$$

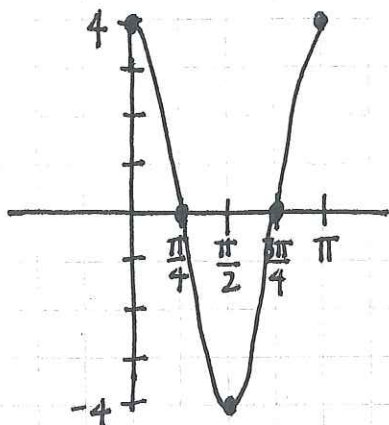
$$\frac{2\pi}{k} = \frac{\pi}{4} \quad \frac{c}{8} = 0$$

$$k\pi = 8\pi \quad c = 0$$

$$k = 8$$

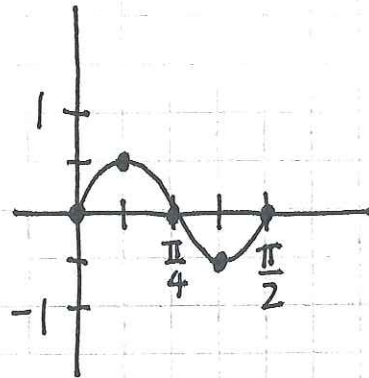
①

θ	$4\cos 2\theta$
0	4
$\pi/4$	0
$\pi/2$	-4
$3\pi/4$	0
π	4



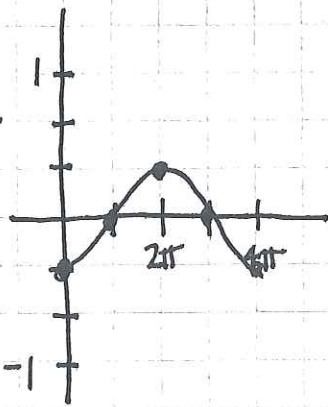
②

θ	$0.5\sin 4\theta$
0	0
$\pi/8$	0.5
$\pi/4$	0
$3\pi/8$	-0.5
$\pi/2$	0



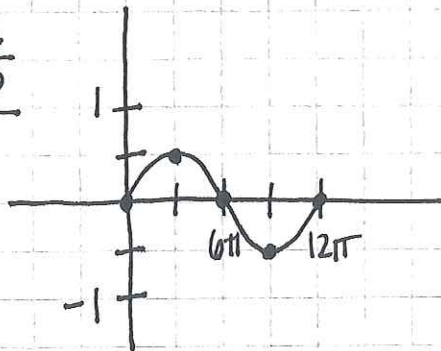
③

θ	$-\frac{1}{3}\cos \frac{\theta}{2}$
0	-1/3
π	0
2π	1/3
3π	0
4π	-1/3



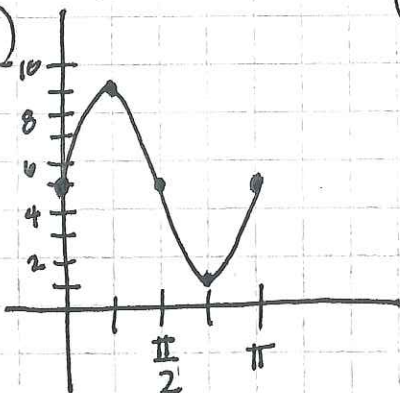
④

θ	$0.5\sin \frac{\theta}{6}$
0	0
3π	0.5
6π	0
9π	-0.5
12π	0



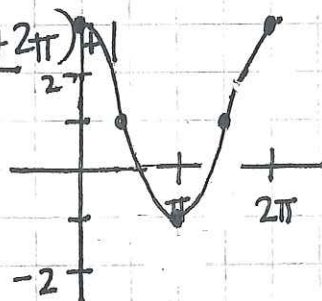
⑤

θ	$5-4\sin(2\theta-\pi)$
0	5
$\pi/4$	9
$\pi/2$	5
$3\pi/4$	1
π	5



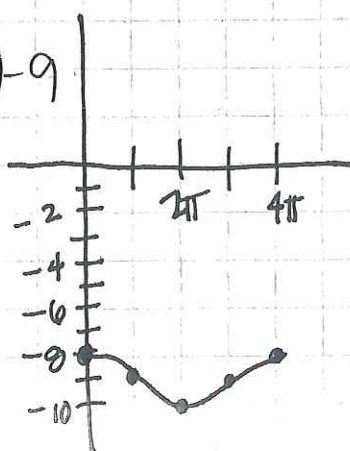
⑥

θ	$2\cos(\theta+2\pi)+1$
0	3
$\pi/2$	1
π	-1
$3\pi/2$	1
2π	3



⑦

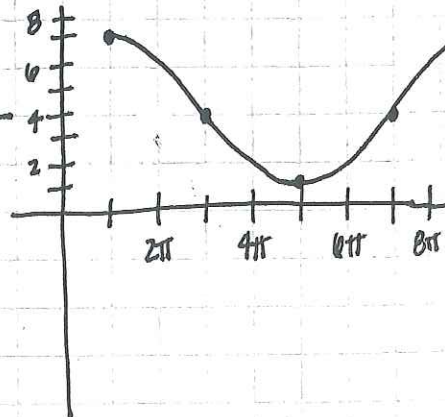
θ	$\sin(\frac{\theta}{2} + \frac{\pi}{2}) - 9$
0	-8
π	-9
2π	-10
3π	-9
4π	-8



⑧

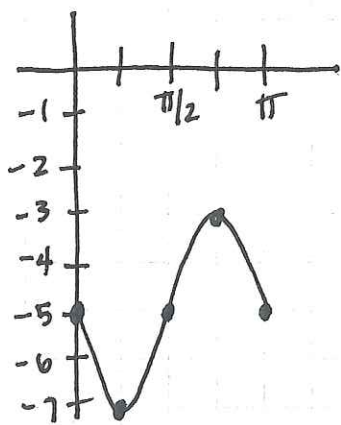
θ	
0 → π	7
2π → 3π	4
4π → 5π	1
6π → 7π	4
8π → 9π	7

+π



9

θ	
0	-5
$\pi/4$	-7
$\pi/2$	-5
$3\pi/4$	-3
π	-5



10

θ	
0	-10
π	-6
2π	-2
3π	-6
4π	-10

