

I

① $y = 2 \sin 2(\theta - \pi/4) + 1$
amp = 2 per = π p.s. = Right $\pi/4$ v.s. = up 1

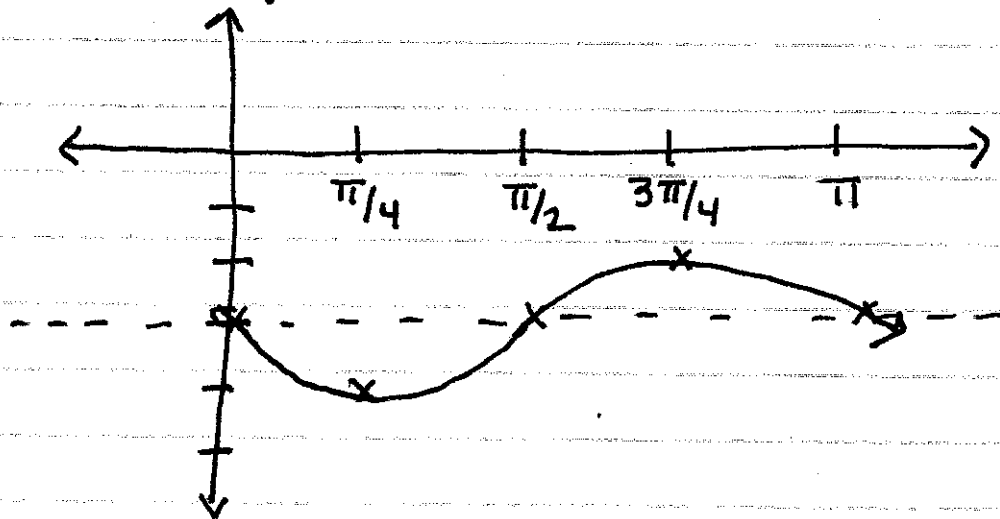
② $y = -3 \cos (\theta + \pi) - 4$
amp = 3 per = 2π p.s. = left π v.s. = down 4

③ $y = 3 \tan (2\theta)$
amp = none per = $\pi/2$ no phase shift
no vertical shift

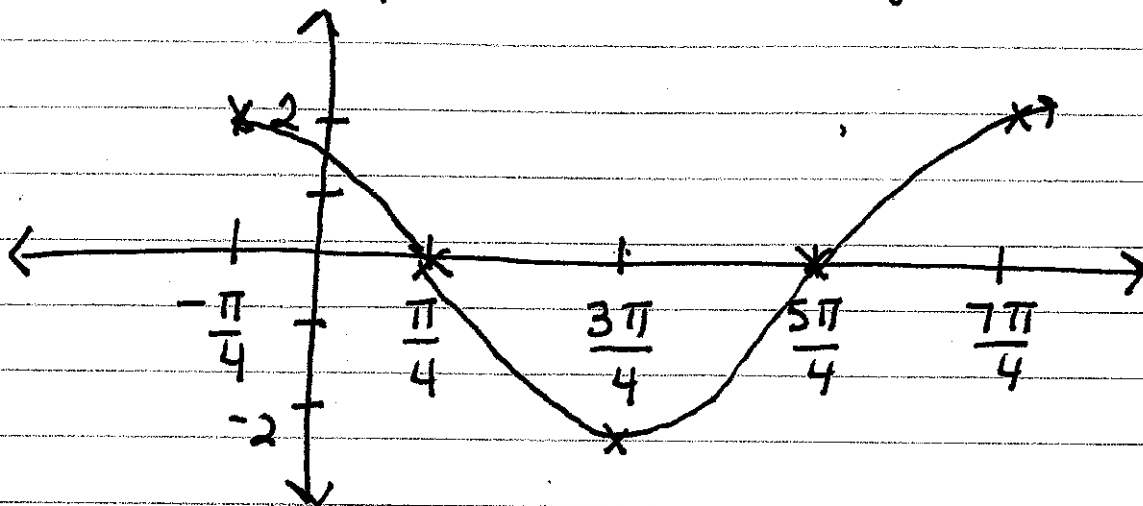
④ $y = 2 \cot 3(\theta - \pi/12) - 2$
amp = none per = $\pi/3$ p.s. = Right $\pi/12$
v.s. = down 2

⑤ $y = -3 \sec (\frac{1}{2}\theta) + 2$
amp = none per = 4π no phase shift
v.s. = up 2

II ⑥ $y = -\sin (2\theta) - 3$
reflect period = π down 3

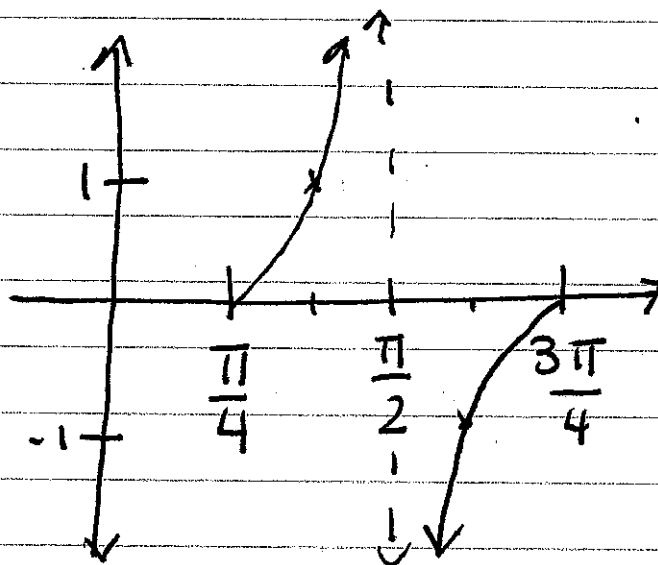


⑦ $y = 2 \cos(\theta + \pi/4)$
 amp = 2 p.s. = left $\pi/4$



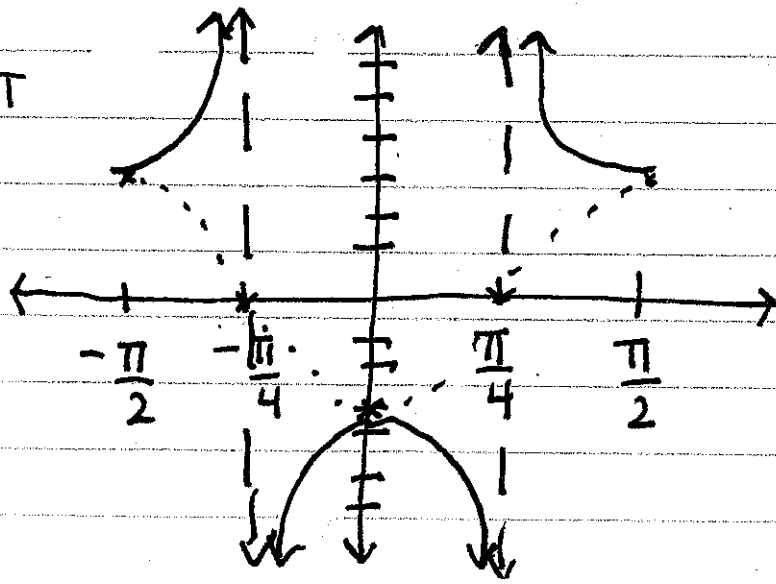
⑧ $y = \tan(2\theta - \pi/2)$

$$\begin{aligned} 2\theta - \pi/2 = 0 & \quad 2\theta - \pi/2 = \pi \\ 2\theta = \pi/2 & \quad 2\theta = 3\pi/2 \\ \theta = \pi/4 & \quad \theta = 3\pi/4 \end{aligned}$$



⑨ $y = 3 \sec(2\theta + \pi)$ (inverse of cos)
 amp = 3

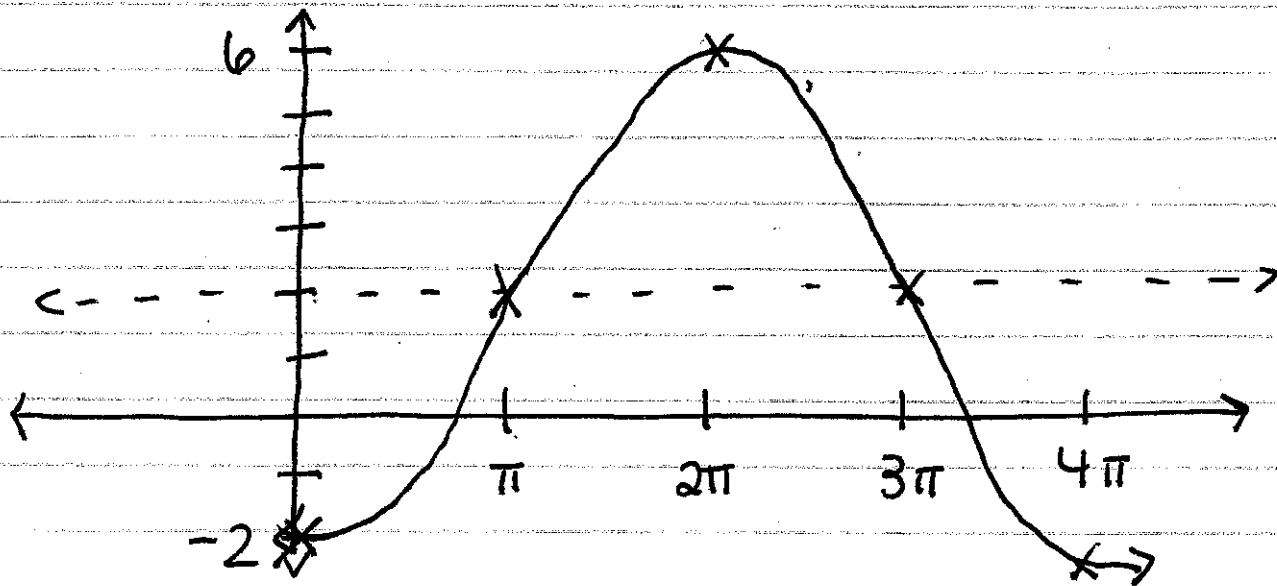
$$\begin{aligned} 2\theta + \pi = 0 & \quad 2\theta + \pi = 2\pi \\ 2\theta = -\pi & \quad 2\theta = \pi \\ \theta = -\pi/2 & \quad \theta = \pi/2 \end{aligned}$$



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$$y = -4 \cos\left(\frac{1}{2}\theta\right) + 2$$

reflect amp = 4 per = 4π up 2



11 $y = 2 \sin(2\theta) + 1$ or $y = 2 \sin 2\theta + 1$

12 $y = \sin\left(\frac{1}{2}\left(\theta - \frac{\pi}{3}\right)\right)$ or $y = \sin\left(\frac{1}{2}\theta - \frac{\pi}{6}\right)$

13 $y = \frac{1}{2} \sin 4\left(\theta + \frac{\pi}{6}\right) - 3$ or
 $y = \frac{1}{2} \sin\left(4\theta + \frac{2\pi}{3}\right) - 3$

14 $\theta = -\pi/4$ 15 $\theta = -\pi/4$ 16 $\theta = \pi/3$

17 $\theta = \pi/3$ 18 $\theta = \frac{\sqrt{2}}{2}$ 19 $\theta = \sin(\arcsin 0 - \cos^{-1} 0)$
 $\theta = \cos(-\pi/4)$ $\theta = \sin(0 - \pi/2)$
 $\theta = \sin(-\pi/2)$

20 $\theta = \pi/6$ 21 $\tan(\pi/4) - \cos(\pi/2)$ $\theta = -1$

$$1 - 0 = 1$$

$$\textcircled{22} \quad a=1 \quad b=- \quad c=\text{Right } \pi/4 \quad d=0$$

$$y = \sin(\theta - \pi/4)$$

$$\textcircled{23} \quad a=2 \quad b=3 \quad c=- \quad d=\text{up } 1$$

$$y = -2 \sin 3\theta + 1$$

$$\textcircled{24} \quad a=3 \quad b=\pi/4 \quad c=-2 \quad d=+5$$

$$y = -3 \sin \pi/4 (\theta + 2) + 5$$

$$y = -3 \sin^{\omega}(\pi/4 \theta + \pi/2) + 5$$

$$\textcircled{25} \quad a=5 \quad b=\frac{\pi}{60} \quad c=-20 \quad d=+3$$

$$y = 5 \sin \frac{\pi}{60} (\theta - 20) + 3$$

$$y = 5 \sin^{\omega}(\frac{\pi}{60} - \frac{\pi}{3}) + 3$$