18. $y=5 \cos \theta-4$
$A_{m p} \mid=5$
$V . S=-4$
midlue $y=-4$
Per=2ा

(14)

$$
\begin{array}{rll}
y & =\sin (\theta-2 \pi) & c_{=2 \pi} \\
\text { P. } S=\frac{2 \pi}{1}=2 \pi & k=1 & \text { Anpl }=1 \\
\text { Per }=2 \pi
\end{array}
$$


28. amplitude $=7$, period $=3 \pi$, phase shift $=\pi$, vertical shift $=-7$

$$
\left.\begin{array}{l}
y=A \sin (k \theta-c)+h \\
y= \pm 7 \sin \left(\frac{2}{3} \theta-\frac{2 \pi}{3}\right)-7 \\
\text { Period }=3 \pi=\frac{2 \pi}{k} \quad \text { PS. }=\pi=\frac{c}{2 / 3} \cdot \frac{2}{3} \quad \pi=\frac{c}{2 / 3} \\
k=\frac{2 \pi}{3 \pi} \\
k=\frac{2 \pi}{3}
\end{array} \quad \frac{2 \pi}{3}=c \quad\left(\frac{2}{3}\right) \pi=\frac{3}{2} c\left(\frac{2}{3}\right)\right)
$$

$$
\begin{array}{ll}
W=2000+1000 \sin \left(\frac{\pi t}{6}\right) & S=10,000+5000 \cos \left(\frac{\pi t}{6}\right) \\
\text { V.S. }=2000 & \text { U.S. }=10,000 \\
A_{m p l}=1000 & \text { Per }=\frac{2 \pi 00}{\pi / 6}=12 \\
\text { Per }=\frac{2 \pi}{\pi / 6}=2 \pi \cdot \frac{6}{\pi}=12 &
\end{array}
$$

