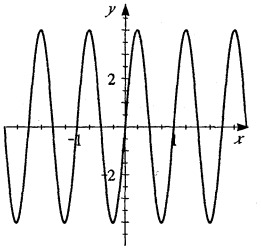
30. $y = 4\sin 2\pi x$

(a) amplitude $= 4$, period $= \frac{2\pi}{2\pi} = 1$, phase shift $= 0$

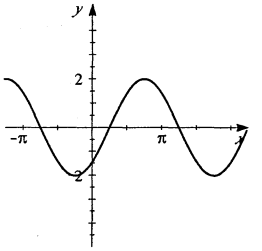
(b)



32. $y = 2\sin\left(x - \frac{\pi}{4}\right)$

(a) amplitude $= 2$, period $= 2\pi$, phase shift $= \frac{\pi}{4}$

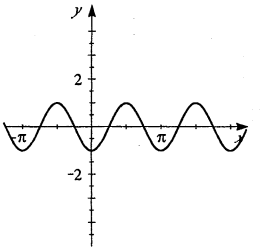
(b)



34. $y = \cos 2\left(x - \frac{\pi}{2}\right)$

(a) amplitude $= 1$, period $= \frac{2\pi}{2} = \pi$, phase shift $= \frac{\pi}{2}$

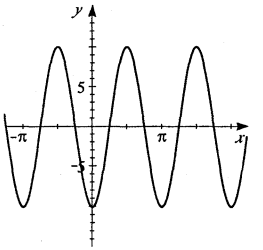
(b)



36. $y = 10\sin\left(2x - \frac{\pi}{2}\right) = 10\sin 2\left(x - \frac{\pi}{4}\right)$

(a) amplitude $= 10$, period $= \frac{2\pi}{2} = \pi$, phase shift $= \frac{\pi}{4}$

(b)



38. From the graph we see that the amplitude is 2, the period is 4 since $\frac{1}{4}$ of the period has been completed at $(1, 2)$, and there is no phase shift. Thus, $\frac{2\pi}{k} = 4 \quad \Leftrightarrow \quad k = \frac{\pi}{2}$. Therefore, the function is $y = 2\sin\frac{\pi}{2}x$.

40. From the graph we see that the amplitude is 4, the period is $\frac{4\pi}{3}$. Thus, $\frac{2\pi}{k} = \frac{4\pi}{3} \quad \Leftrightarrow \quad k = \frac{3}{2}$. The phase shift is $-\frac{\pi}{3}$. Therefore, the function is $y = 4\sin\frac{3}{2}\left(x + \frac{\pi}{3}\right)$.