[3.5]

#56 $y = 5 + 4.9\cos\left(\frac{\pi}{6}t\right)$

$\frac{dy}{dt} = -4.9\sin\left(\frac{\pi}{6}t\right)\cdot\frac{\pi}{6}$

$\frac{dy}{dt} = \frac{-4.9\pi}{6}\sin\left(\frac{\pi}{6}t\right)$

(a) $\frac{dy}{dt}$ represents the change in water level in feet with respect to change in time in hours since midnight.

(b) $\frac{dy}{dt} = \frac{-4.9\pi}{6}\sin\left(\frac{\pi}{6}t\right) = 0 \qquad 0 \le t \le 24$

$0 \le \frac{\pi}{6}t \le 4\pi$

$\sin\left(\frac{\pi}{6}t\right) = 0$

$\frac{\pi}{6}t = 0, \pi, 2\pi, 3\pi, 4\pi$

$t = 0, 6, 12, 18, 24$ hours

At the instant $\frac{dy}{dt} = 0$, the water level is not changing.