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Tides In Daytona Beach, Florida, the first high tide was 3.99 feet at 12:03 A.M. The first low tide of 0.55 foot occurred at 6:24 A.M. The second high tide occurred at 12:19 P.M. *(Lesson 6-6)*

3 min after midnight $= \frac{3}{60}\text{hr} = \frac{1}{20} = .05$

a. $\text{Ampl} = \frac{3.99 - .55}{2} = 1.72$

b. $\text{V.S.} = \frac{3.99 + .55}{2} = 2.27$

c. $12{:}19^{PM} - 12{:}03^{AM} = 12\text{hrs}, 16\text{ min} = \underline{\underline{12.3\text{ hrs}}}$

$12.3 = \frac{2\pi}{K}$

$K = \frac{2\pi}{12.3} = \frac{\pi}{6.15}$

d. $y = 1.72\cos\left(\frac{\pi}{6.15}t - c\right) + 2.27$

$3.99 = 1.72\cos\left(\frac{\pi}{6.15}(.05) - c\right) + 2.27$

$3.99 - 2.27 = 1.72\cos\left(\frac{\pi}{6.15}(.05) - c\right) + 2.27 - 2.27$

$\frac{1.72}{1.72} = \frac{1.72\cos\left(\frac{.05\pi}{6.15} - c\right)}{1.72}$

$1 = \cos\left(\frac{.05\pi}{6.15} - c\right)$

$\cos^{-1}(1) = \frac{.05\pi}{6.15} - c$

$0 = \frac{.05\pi}{6.15} - c$

$c = \frac{.05\pi}{6.15}$

$y = 1.72\cos\left(\frac{\pi}{6.15}t - \frac{.05\pi}{6.15}\right) + 2.27$

$$I = 220 \sin\left(\frac{60\pi}{k}(t) - \frac{\pi}{6}\right)$$

$c = \frac{\pi}{6}$

47 a. Ampl = 220

b. $\text{Per} = \frac{2\cancel{\pi}}{60\cancel{\pi}} = \frac{1}{30}$

c. $\text{P.S.} = \frac{\pi/6}{\frac{60\pi}{1}} = \frac{\cancel{\pi}}{6} \cdot \frac{1}{60\cancel{\pi}} = \frac{1}{360}$

d. $y = 220\sin\left(60\pi(60) - \frac{\pi}{6}\right)$