



PROBLEM:

In each of the following cases, simplify the expression as much as possible. Show your work to receive full credit.

(a) $4 \cos(0.125\pi(n + 1)) - 4 \cos(0.125\pi(n - 1)) =$

(b) $\int_{t-1}^{t+1} \delta(\tau - 3) d\tau =$



In each of the following cases, simplify the expression as much as possible.

(a) $4 \cos(0.125\pi(n+1)) - 4 \cos(0.125\pi(n-1)) = \boxed{-3.061 \sin(\frac{1}{8}\pi n)}$

$$4 \cos(\frac{1}{8}\pi n + \frac{1}{8}\pi) - 4 \cos(\frac{1}{8}\pi n - \frac{1}{8}\pi)$$

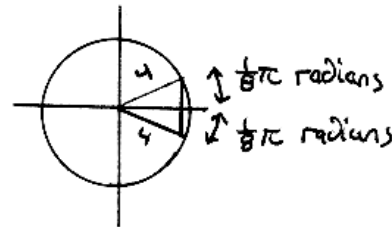
$$4 \angle \frac{1}{8}\pi - 4 \angle -\frac{1}{8}\pi$$

USE CALCULATOR OR GRAPHICAL TECHNIQUES

$$3.061 \angle \frac{\pi}{2}$$

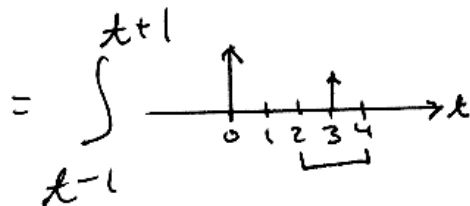
$$3.061 \cos(\frac{1}{8}\pi n + \frac{\pi}{2})$$

$$- 3.061 \sin(\frac{1}{8}\pi n)$$



(b) $\int_{t-1}^{t+1} \delta(\tau-3) d\tau = \boxed{u(t-2) - u(t-4)}$

INTEGRAL RANGE MUST INCLUDE IMPULSE TO BE NON-ZERO



$$t+1 > 3 \Rightarrow t > 2$$

$$t-1 < 3 \Rightarrow t < 4$$

$$= \begin{cases} 1 & \text{if } 2 < t < 4 \\ 0 & \text{else} \end{cases}$$