

$$T=0 \text{ 일 때}$$

$$C_n = b_n \cos\left(\frac{\pi}{l}\left(n+\frac{1}{2}\right)x\right) + 5 = 100, \text{ put } T_0 \cdot b_n = b_n'$$

$$b_n' \cos\left(\frac{\pi}{l}\left(n+\frac{1}{2}\right)x\right) = 95$$

$$b_n' \int_0^l \left(\cos\left(\frac{\pi}{l}\left(n+\frac{1}{2}\right)x\right)\right)^2 dx = \int_0^l \cos\left(\frac{\pi}{l}\left(n+\frac{1}{2}\right)x\right) \cdot 95 dx = \frac{b_n' \cdot l}{2}$$

$$b_n' = \frac{2}{l} \int_0^l 95 \cdot \cos\left(\frac{\pi}{l}\left(n+\frac{1}{2}\right)x\right) dx$$

$$= \frac{2}{l} \cdot 95 \cdot \left[\frac{1}{\left(n+\frac{1}{2}\right) \cdot \frac{\pi}{l}} \sin\left(\frac{\pi}{l}\left(n+\frac{1}{2}\right)x\right) \right]_0^l$$

$$= \frac{2}{l} \cdot 95 \cdot \left(\frac{1}{\left(n+\frac{1}{2}\right) \cdot \frac{\pi}{l}} \right) = \frac{2 \cdot 95}{\pi \left(n+\frac{1}{2}\right)}$$

$\therefore$ 그러므로 n 짝수일 때 $\frac{1}{1}, \frac{3}{3}, \frac{5}{5}, \dots$ 즉, $n = \text{all number even number}$

$$C_n = \frac{190}{\pi \left(n+\frac{1}{2}\right)} \cdot \cos\left(\frac{\pi}{l}\left(n+\frac{1}{2}\right)x\right) \cdot \exp\left(-\left(\frac{\pi}{l}\left(n+\frac{1}{2}\right)\right)^2 Dt\right) + 5$$

for even number n .

with first term approximation,

$$C = \frac{190}{\pi \left(n+\frac{1}{2}\right)} \cos\left(\frac{\pi}{l}\left(n+\frac{1}{2}\right)x\right)$$

$$C = \frac{380}{\pi} \cos\left(\frac{\pi}{2l}x\right) \exp\left(-\left(\frac{\pi}{2l}\right)^2 Dt\right) + 5$$