

11COSWS

Cosine function depending on x, t, and a phase constant.

Interchanging x/λ with t/T in the phase factor $2\pi(x/\lambda - t/T)$ has no effect on the cosine function. We see an equivalent dependence of the cos-function on x/λ and t/T .

Two sets of each three functions are shown, they give the same graphs when changing the dependence on x or t, using the same range, and leaving the other corresponding parameters the same.

In the way the cosine functions are written, an additional phase factor may have its origin in the space or time part, we do not know.

$$x1 := 0..10$$

$$\lambda := 1 \quad T := 10$$

$$A1 := 1 \quad t1 := 1 \quad \phi1 := .5$$

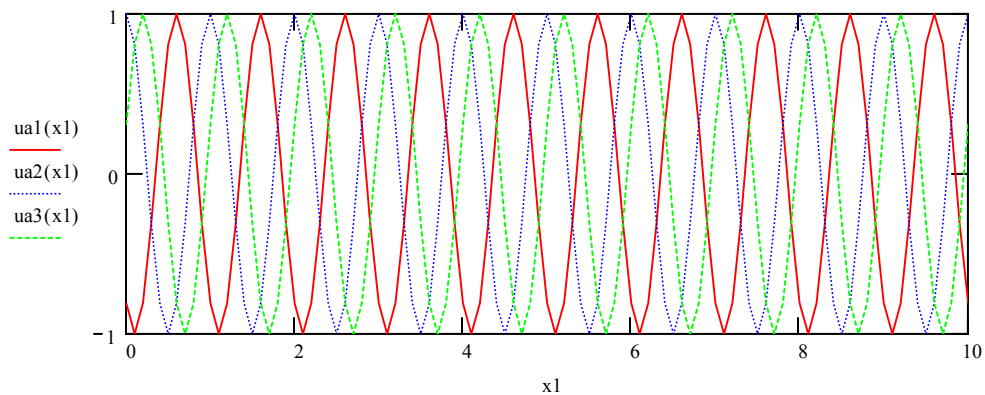
$$A2 := 1 \quad t2 := 2 \quad \phi2 := .2$$

$$A3 := 1 \quad t3 := 3 \quad \phi3 := .1$$

$$ua1(x1) := A1 \cdot \cos \left[2 \cdot \pi \cdot \left(\frac{x1}{\lambda} - \frac{t1}{T} + \phi1 \right) \right]$$

$$ua2(x1) := A2 \cdot \cos \left[2 \cdot \pi \cdot \left(\frac{x1}{\lambda} - \frac{t2}{T} + \phi2 \right) \right]$$

$$ua3(x1) := A3 \cdot \cos \left[2 \cdot \pi \cdot \left(\frac{x1}{\lambda} - \frac{t3}{T} + \phi3 \right) \right]$$



$$t1 := 0..10$$

$$\lambda\lambda := 10$$

$$TT := 1$$

$$B1 := 1 \quad x1 := 1 \quad \psi1 := 1$$

$$ub1(t1) := B1 \cdot \cos\left[2 \cdot \pi \cdot \left(\frac{x1}{\lambda\lambda} - \frac{t1}{TT} + \psi1\right)\right]$$

$$B2x2 := 2 \quad \psi2 := 1$$

$$ub2(t1) := B2 \cdot \cos\left[2 \cdot \pi \cdot \left(\frac{x2}{\lambda\lambda} - \frac{t1}{TT} + \psi2\right)\right]$$

$$B3 := 1 \quad x3 := 3 \quad \psi3 := 1$$

$$ub3(t1) := B3 \cdot \cos\left[2 \cdot \pi \cdot \left(\frac{x3}{\lambda\lambda} - \frac{t1}{TT} + \psi3\right)\right]$$

