

LDDB Niveau 1 : TE 8 Trigo

Exercice 1 1) $\cos x = 0.7 \Rightarrow \begin{cases} x = 0.8 + 2k\pi & (1) \\ x = -0.8 + 2k\pi & (2) \end{cases}$

(1) $k=0 \quad x < 14 \quad x$
 $k=1 \quad x < 14 \quad x$
 $k=2 \quad x < 14 \quad x$
 $k=3 \quad x = 19.65 \quad v$
 $k=4 \quad x > 20 \quad x$

(2) $k=0 \quad x < 0 \quad x$
 $k=1 \quad x < 14 \quad x$
 $k=2 \quad x < 14 \quad x$
 $k=3 \quad x = 18.05 \quad v$
 $k=4 \quad x > 20 \quad x$

2) $\sin x = -0.4 \Rightarrow \begin{cases} x = 23.58^\circ + k360^\circ & (1) \\ x = 180 - 23.58^\circ + k360^\circ \\ \quad = 156.42^\circ + k360^\circ \end{cases}$

(1) $-180 < 23.58 + k \cdot 360 < 180 \Rightarrow$
 $\Rightarrow -203.58 < k360 < 156.42 \Rightarrow$
 $\Rightarrow -0.5655 < k < 0.4345 \Rightarrow k=0$
 $x = 23.58^\circ$

(2) $-180 < 156.42 + k360 < 180 \Rightarrow$
 $\Rightarrow -336.42 < k360 < 23.58 \Rightarrow$
 $-0.9345 < k < 0.0655 \Rightarrow k=0$
 $x = 156.42^\circ$

Exercice 2 1) $\sin(2x) = 0.3 \Rightarrow \begin{cases} 2x = 17.46^\circ + k360^\circ \\ 2x = 180 - 17.46^\circ + k360^\circ = 162.54^\circ + k360^\circ \end{cases}$

2) $\cos(x + \frac{\pi}{2}) = \cos(2x) \Rightarrow \begin{cases} x + \frac{\pi}{2} = 2x + 2k\pi \\ x + \frac{\pi}{2} = \pi - 2x + 2k\pi \end{cases} \Rightarrow$
 $\Rightarrow \begin{cases} -x = -\frac{\pi}{2} + 2k\pi \\ 3x = \frac{\pi}{2} + 2k\pi \end{cases} \Rightarrow \begin{cases} x = \frac{\pi}{2} + 2k\pi \\ x = \frac{\pi}{6} + \frac{2k\pi}{3} \quad k \in \mathbb{Z} \end{cases}$

$$\begin{aligned}
 3) \quad \sin^2 x &= 1 - \cos x \Rightarrow 1 - \cos^2 x = 1 - \cos x \Rightarrow \\
 \cos^2 x - \cos x &= 0 \Rightarrow \cos x (\cos x - 1) = 0 \Rightarrow \\
 \bullet \cos x &= 0 \Rightarrow x = \frac{\pi}{2} + k\pi \\
 \bullet \cos x &= 1 \Rightarrow x = k\pi.
 \end{aligned}$$

EXERCISE 3. 1) $\sin(90^\circ + x) + \cos(180^\circ - x) - \cos(x - 270^\circ) =$
 $= \cos x - \cos x + \sin x = \sin x$

$$\begin{aligned}
 2) \quad (\cos x + \sin x)^2 + (\cos x - \sin x)^2 &= \\
 = \cos^2 x + \sin^2 x + 2\sin x \cos x + \cos^2 x + \sin^2 x - 2\sin x \cos x &= \\
 = 2
 \end{aligned}$$