LDDR – Niveau 2 : TE 12 – Trigonometrie

Exercise 1 Without using a calculator, find the exact value of :

1) $\cos(240°)$ 2) $\sin\left(\frac{5\pi}{3}\right)$ 3) $\tan(-1470°)$

Details of the calculus are expected.

Exercise 2 The perimeter of a circular sector is equal to $\frac{40}{9}$. Knowing that the length of the corresponding arc is $\frac{2}{3}$ of the radius, calculate :

1) the angle (in degrees)

2) the area

Exercise 3 1) Simplify $\dfrac{\cos(x)-\cos^3(x)}{\sin(x)\cdot\cos(x)}$

2) Prove the identity $\dfrac{\cos(x)+1}{\cos(x)} \equiv \dfrac{\sin(x)\cdot\tan(x)}{1-\cos(x)}$

Exercise 4 Solve the following equations :

1) $\cos(3x°)=-0.55$ in $[0;180°]$

2) $\sin(2y)=0.2$ in $[17;18]$

3) $4\sin^2(t°) + (2\sqrt{2} - 2\sqrt{3})\sin(t°) = \sqrt{6}$

Exercise 5 Given the functions $f(x) = \sin(x) + 1$ and $g(x) = 1 - 2\cos(x)$.

1) Draw, in the same system of axes, the graphs of f and g in $[0; 2\pi]$
   [Vu: 1=4 squares, Hu: $\frac{\pi}{2}$=6 squares]

2) Find, with a calculus, the coordinates of one intersection point.

Exercise 6 Find the polar coordinates of the mid-point of the segment AB

with $A\left[2;\frac{2\pi}{3}\right]$ and $B\left[2\sqrt{3};\frac{\pi}{6}\right]$.