1) What is meant by
(a) "a function \( f \) is periodic" and hence "the period of a function \( f \)"
(b) "the amplitude of the trigonometric functions \( y = a \sin(kx)\) and \( y = a \cos(kx), (k > 0)\)"
(c) "the phase shift of the trigonometric functions \( y = a \sin(k(x - b))\) and \( y = a \cos(k(x - b))\"
(d) "the inverse sine function, the inverse cosine function, and the inverse tangent function"

2) (a) Find the amplitude and period of the following trigonometric functions and sketch their graphs in one complete period.

(i) \( y = 4 \sin\left(\frac{1}{2}x\right) \)  (ii) \( y = -3 \cos(2x) \)

(b) Find the amplitude, period, and phase shift of the following trigonometric functions and sketch their graphs in one complete period.

(i) \( y = 5 \sin(2(x - \frac{\pi}{4})) \)  (ii) \( y = 3 \cos(2(x - \frac{\pi}{3})) \)

3) (a) Without using a calculator, simplify and express

(i) \( \arcsin\left(\frac{\sqrt{3}}{2}\right) \)  (ii) \( \cos[\arcsin(\frac{\sqrt{2}}{2})] \)

in terms of rational numbers and radicals.

(b) If \( \sin(\theta) = \frac{4}{5} \) and \( \theta \) is in the third quadrant. Find \( \cos(2\theta) \).

(c) Solve the equation \( \sin(x) = \cos(2x) \) in the interval \([0, 2\pi]\).