1. Determine the amplitude, period, frequency, angular frequency, phase and time-shift (with respect to a cosine) for the following sinusoidal signals.

2. Sketch the waveforms shown in Figure 1 in the frequency domain.

3. Sketch the projection of the phasor shown in Figure 2 on the
   (i) real-axis and
   (ii) imaginary-axis.

Figure 1

Figure 2
4. Sketch the real and imaginary components of the following signal: \( v(t) = 2e^{j2\pi(1-t)} \).

5. Figure 3 shows the frequency spectrum of a signal.
   (a) How many frequency components are present in this signal?
   (b) Write an equation for each frequency component.
   (c) Use graph paper to sketch each frequency component and the composite signal.

![Figure 3](image)

6. Determine the amplitude and the phase shift (with respect to the cosine) of the signal resulting from the addition of the indicated two component signals:

   (a) \( v_1(t) = 3\sin(2t) \)
   \[ v_2(t) = 4\cos(2t) \]

   (b) \( v_1(t) = 2.5\cos\left(2\pi \cdot 500(t - 0.0004)\right) \)
   \[ v_2(t) = -3.5\cos\left(2\pi \cdot 500t + \frac{\pi}{4}\right) \]