

NAME and SURNAME (CAPITAL LETTERS): .....

## Signal Processing Test 1a

1. A harmonic signal is given  $x(t)=\sin(10\pi t+\pi/4)$ . Plot this signal using a correct time scale. Give the physical frequency in Hz of this signal and its angular frequency value.
2. The ratio of signal powers increases according to a series: 1, 10, 100, 1000, 10000 express this series in a decibel scale. Show the calculations for the middle element of the series.
3. The amplitude of a sinusoidal signal is equal to  $A_{in}=10$  Volts. Voltage amplification of the amplifier is 20dB, what is the amplitude  $A_{out}$  of the output signal. Show calculations.
4. Plot the frequency spectrum of a Dirac delta function.
5. Compute the DC component and the energy of signal  $x(n)=[1, 2, 3, 4]$

