**Question 1:** Consider the constellation below:



1. Give the expression for the probability of bit error assuming that the noise spectral height is N0/2. Make all substitutions.
2. Give the average energy per bit
3. Assume that the basis functions are given below. Let Ts be the symbol duration



Sketch and mathematically express the signal s4(t) as a function of time. Give complete description.

**Question 2:** Say if the pulse Fourier Transform P(f) shown below implies that the pulse is a Nyquist pulse or nor? Explain your answer.



b) Consider the pulse below, plotted versus time in microseconds. Could this pulse be a Nyquist pulse for a binary transmission with a 10MHz data rate? Explain why or why not

