Quiz 8: You will have 30 minutes. Closed book. Due at the start of class on Monday Dec 8. There are 3 questions.

1. For the interval \([a=0, b=1]\), let \(P\) be the partition gotten by dividing the interval into \(n = 5\) equal subintervals. Write out the elements of the partition \(P = \{x_0 < x_1 < x_2 < \ldots < x_n\}\).

2. For \(f(x) = x^2\), on the interval \([a=0, b=1]\), calculate the lower and upper sums \(L_p(f)\) and \(U_p(f)\) where \(P\) is the partition given above. For each sum, make a sketch in the xy plane of the function \(y=f(x)\) and draw in the boxes that are used to calculate the lower and upper sums.

3. Based on your result in (2), give lower and upper estimates for \(\int_0^1 x^2 \, dx\).