

SULTAN QABOOS UNIVERSITY
DEPARTMENT OF MATHEMATICS AND STATISTICS

Math 4141

Fall 2011

Quiz 2

Time: 30 minutes

Name:

Section:

Number.

In questions 1, 2 and 3, show your complete, mathematically correct and neatly written solution.

Q1: *(5 points)*

Find the Lagrange interpolating polynomial $P_4(x)$ for the points $(0, 0)$, $(1, 2)$, $(2, 3)$, $(3, 3)$ and $(4, 5)$.

Q2: *(3+2 points)*

(i) Use the divided differences method to find the polynomial interpolating the points $(1, a)$, $(2, 3)$, $(4, 5)$.

(ii) Use any method to find the polynomial of degree 3 that interpolates $f(x) = x^3$ at $x_0 = 0$, $x_1 = 1$, $x_2 = 2$ and $x_3 = 3$.

Q3: *(5 points)*

Construct the cubic interpolating polynomial to $f(x) = \sin(x)$ using the nodes $x_0 = 0$ and $x_1 = \pi$.

Good Luck