Note: Show all your operations in detail. The solutions that do not have enough details will be graded with zero points.

1. (P.112 Q.6a) Use appropriate Lagrange interpolating polynomials of degrees one, two, and three to approximate $f(0.43)$, if $f(0) = 1$, $f(0.25) = 1.64872$, $f(0.5) = 2.71828$, and $f(0.75) = 4.48169$.

2. (P.113 Q.14b) Construct the Lagrange interpolating polynomials for $f(x) = \log_{10}(x)$, using the samples of $f(x)$ at $x_0 = 3.0$, $x_1 = 3.2$, $x_2 = 3.5$, and $n = 2$, and find a bound for the absolute error on the interval $[x_0, x_2]$.

3. (P.121 Q.2b) Use Neville's method to obtain the approximations for Lagrange interpolating polynomials of degrees one, two, and three to approximate $f(0)$, if $f(-0.5) = 1.93750$, $f(-0.25) = 1.33203$, $f(0.25) = 0.800781$, and $f(0.5) = 0.687500$.

4. (P.121 Q.6) Neville's method is used to approximate $f(0.5)$, giving the following table:

$x_0 = 0$	$P_0 = 0$		
$x_1 = 0.4$	$P_1 = 2.8$	$P_{0,1} = 3.5$	
$x_2 = 0.7$	P_2	$P_{1,2}$	$P_{0,1,2} = \frac{27}{7}$

   Determine $P_2 = f(0.7)$.