(3p) 1. Find the parabola $y = A + Bx + Cx^2$ that passes through the three points $(1,3), (2,7)$ and $(3,13)$, using Gauss elimination method.

2. Let $f(x) = x^3 - 4x$.

(2p) a) Construct the divided-difference table based on the nodes $x_0 = 1$, $x_1 = 2$, $x_2 = 3$, $x_3 = 4$, $x_4 = 5$.

(2p) b) Find the Newton interpolation polynomial for the nodes from a).

(2p) 3. Given the continuous function $g(x)$ for which we know $g(0) = 4$, $g(1) = 6$, $g(2) = -3$, $g(3) = 2$ and $g(4) = 1$ use the repeated trapezium formula to approximate $\int_0^4 g(x)dx$.