

Name-Surname:

Student No:

Class:

Grade:

MAT435

Computer Aided Geometric Design

Quiz 3

18.11.2003

YOU must write GOOD Mathematics, clearly explaining each step of your proof. Otherwise, no objection!

1. Prove by induction on k that

$$\Delta^k \mathbf{b}_i = \sum_{j=0}^k (-1)^j \binom{k}{j} \mathbf{b}_{i+k-j}.$$

2. Given the control points $(0, 0), (2, 2), (4, 0), (6, 2)$, let $\mathbf{X}(t)$ be the Bézier curve. Evaluate $\ddot{\mathbf{X}}(t)$ (the second derivative), *using the derivative formula for the Bézier curves*. (Direct derivative calculation will not be accepted in any circumstance)