

2007 Paper 9 Question 7

Advanced Graphics

- (a) Outline a method that could be used for modelling water and other fluids. [6 marks]
- (b) (i) Show how to find the first intersection between a ray and a finite-length, open-ended cone, of unit slope, centred at the origin, aligned along the y -axis, for which both ends of the finite-length are on the positive y -axis (i.e. $0 < y_{min} < y_{max}$). [6 marks]
- (ii) Extend this to cope with a closed cone (i.e. the same cone, but with end caps). Take care to consider any special cases. [4 marks]
- (iii) Extend this further to give the normal vector at the intersection point. Take care to consider all cases. [4 marks]