

Sign the exam with your student number - not your name \_\_\_\_\_

Answer the following questions to the best of your ability.

1. (40 pts) Explain how you would map the coordinates defining an object in world space into coordinates that define the object in view space. Do do this you are given an *eye point*  $E = (e_x, e_y, e_z)$ , a *look-at point*  $A = (a_x, a_y, a_z)$ , and a unit length *up vector*  $\vec{U} = \langle u_x, u_y, u_z \rangle$ . Showing (how to construct) the view matrix is sufficient to answer the question.

2. (40 pts) Explain how you would clip a line defined by endpoints  $P_0 = (x_0, y_0)$  and  $P_1 = (x_1, y_1)$  against the unit square  $0 \leq x \leq 1, 0 \leq y \leq 1$ . Presenting a line clipping algorithm is sufficient to answer the question.

3. (20 pts) Given two polygons  $\mathcal{P}_1$  and  $\mathcal{P}_2$  explain how you would determine if one (partially) hides the other. Presenting a hidden surface algorithm is sufficient to answer the question.