**NAME:**

Time:  5 Minutes

**NOTES:**

a. **Credit is only given to the correct numerical values.**
b. **All numerical values must be calculated with three digits of accuracy after the decimal point.**
c. **Do not write on the back side of the papers.**

1.      Consider points $A = (2,\ 7.3\ ,-0.5)$ and $B = (-2\ ,-6.7\ ,\ 1.5\ )$ in a **Standard Parallel Projection** scenario (after multiplying the composite matrix). Clip line $AB$ against the unit cube planes $y = 1$ and $x = 0$ planes. (in this question, there is no need to calculate clipping against other planes of the unit cube)

Show the equation of line $AB$

$$\begin{cases} x = -4t + 2 \\ y = -14t + 7.3 \\ z = 2t - 0.5 \end{cases}$$

Find the clipped coordinates (if the line $AB$ does not have a valid intersection with the unit cube say "**reject**" as your answer and explain your reason.)

Coordinates of points after clipping:

Intersection with $x = 0$

$$0 = -4t + 2 \rightarrow t = 0.5 \rightarrow \begin{cases} x = 0 \\ y = 0.3 \\ z = 0.5 \end{cases} \rightarrow \begin{cases} 0 \leq t \leq 1 \\ 0 \leq y, z \leq 1 \end{cases} \rightarrow Accept\ (0, 0.3, 0.5)$$

Intersection with $y = 1$

$$1 = -14t + 7.3 \rightarrow t = \frac{9}{20} \rightarrow \begin{cases} x = 0.2 \\ y = 1 \\ z = 0.4 \end{cases} \rightarrow \begin{cases} 0 \leq t \leq 1 \\ 0 \leq x, z \leq 1 \end{cases} \rightarrow Accept\ (0.2, 1, 0.4)$$