



Computer Graphics
Spring 2014 Quiz 4



NAME:

Time: 5 Minutes

NOTES:

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



Point **A(-11, -20)** is given in a two dimensional world coordinate system. Find the coordinates of the point A on the screen after it is mapped from window to viewport.

$$x_{wmin} = -15 \quad y_{wmin} = -25 \quad x_{wmax} = -10 \quad y_{wmax} = -15$$

Normalized device coordinate of the viewport:

$$x_{vmin} = 0.1 \quad y_{vmin} = 0.3 \quad x_{vmax} = 0.6 \quad y_{vmax} = 0.9$$

The origin of the screen coordinate system is defined in the **upper left** corner of the screen and the screen resolution is 800 (Horizontal) by 600 (Vertical).

Use rounding to convert from float to integer.

Screen coordinates of point A after mapping are:

(400,360)

$$S_x = \frac{0.6 - 0.1}{-10 - (-15)} = 0.1 \rightarrow A_x = [0.1 + 0.1(-11 - (-15))] \times 800 = 400$$
$$S_y = \frac{0.9 - 0.3}{-15 - (-25)} = 0.06 \rightarrow A_y = [0.3 + 0.06(-15 - (-20))] \times 600 = 360$$