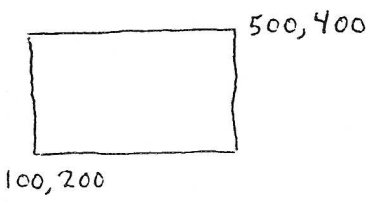
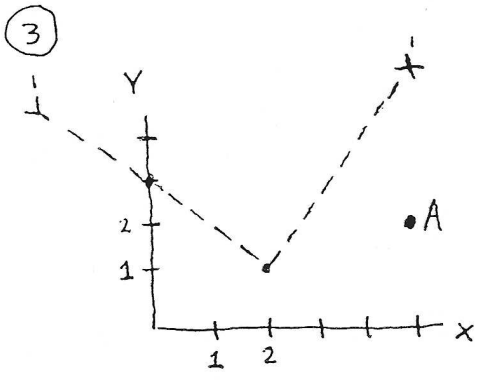
① Show by multiplying the appropriate matrices together (homogeneous 2d coordinates) that a translation by (dx, dy) followed by a rotation by θ is not the same as rotating first and then translating (unless $dx = dy = 0$ or $\theta = 2k\pi$).

② The x,y data defining an object is such that $-2 \le X \le 3$ and $7 \le y \le 15$. We desire to stretch the data in X and then stretch it in y and then translate it so that it just barely fits on the screen:

Show the equations necessary to do this.



③



IN the X-Y coordinate system, point A has coordinates (5,2). What coordinates does it have in the X'-Y' coordinate system?

④ Consider the square window shown below:

Give the new polygon that is created when triangle ABC is clipped to this window.

A = (70,100)
B = (120,150)
C = (65,25)