Math 54 Worksheet 11
GSI: Lionel Levine
2/25/05

1. Find a 2×2 matrix which performs the action on $\mathbb{R}^2$.

   (a) Stretches the x-axis by a factor of 2, and leaves the y-axis fixed.

   (b) Reflects the x-axis and compresses the y-axis by a factor of 3.

   (c) Projects vertically onto the x-axis.

   (d) Rotates clockwise by $90°$.

   (e) Rotates by $180°$.

   (f) Reflects both the x and y-axes.

   (g) Reflects through the line $y = x$.

   (h) Reflects through the line $y = 2x$.

   (i) First reflects through the line $y = 2x$, and then rotates clockwise by $90°$.

   (j) First rotates clockwise by $90°$, and then reflects through the line $y = 2x$.