MA341 — Homework #5
Due Wednesday, March 5, in class

1. Problem 3.4.1.

2. Solve the specific example given in Problem 3.3.25. (We began this in class.)

3. Consider the line L given by the equation $ax + by = c$.

   (a) Suppose $P(x_1, y_1)$ and $Q(x_2, y_2)$ are any two points on the line. Explain why the line segment $\overline{PQ}$ is perpendicular to the line segment joining P and the point $(x_1 + a, y_1 + b)$.

   (b) Now let R be any point not on L. Consider the line M given by the parametric expression $R+t(a, b)$, where $t \in \mathbf{R}$. Find the value of t for the point of intersection of M and L.

   (c) Use this to find the coordinates of the point S which is the reflection of the point R with respect to the line L.