

Assignment 1

Due: January 27, 2020

Note: Please show all the *important* steps while answering the questions.

1. Is matrix multiplication commutative? [13]

Justify your answer by demonstrating it with the given two transformations (T and R) together on the triangle represented by its vertices A(3,0), B(0,0), and C(0,3). Also, sketch the original and transformed triangles.

T = Translation in X-direction by 3, and in Y-direction by 0

R = Rotation with respect to the origin by -90°

2. Write both implicit and parametric representations of the ellipse shown in Fig. 1. [8]

3. What are the coordinates of Point Q on the ellipse shown in Fig. 1. [5]

4. Determine if the following points lie inside, outside or on the ellipse shown in Fig. 1: $P_1(3, 1)$, $P_2(8, 3)$, $P_3(6, 3)$. [9]

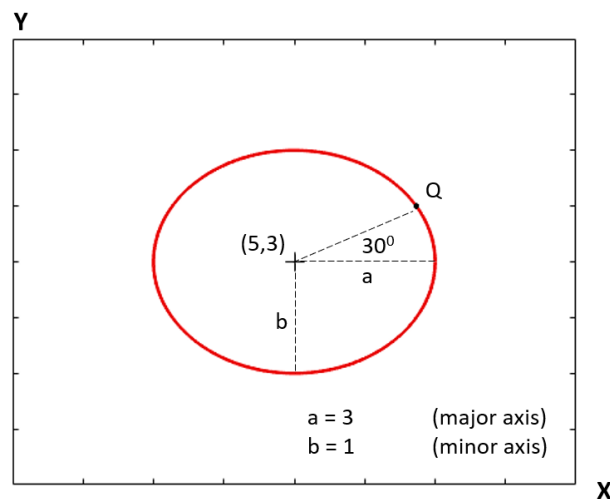


Figure 1: Ellipse