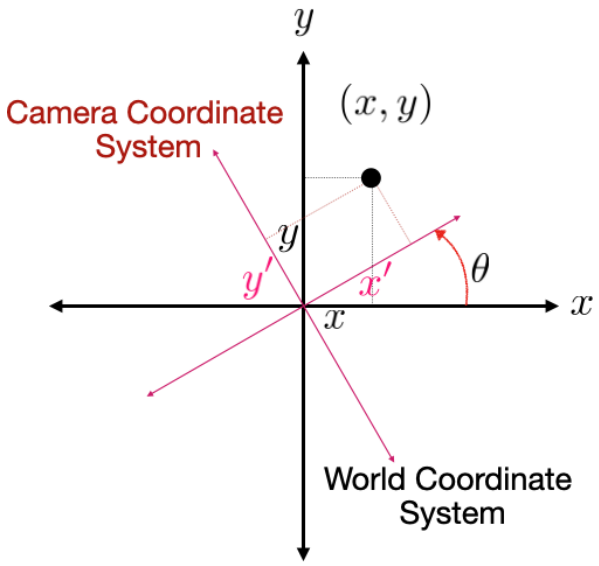
**Computer Vision I (CSCI 3240U)** **In-class Exercise**

Please hand in this paper to the instructor before the end of the lecture.

Name: _____

Student number: _____ Date: _____

**Q.** Say a point $(x, y)$ in the world-coordinate-system is mapped to point $(x', y')$ in the camera-coordinate-system. Furthermore, we know that $(x, y) \neq (0, 0)$ and that the camera sits at the origin of the world-coordinate-system.




Estimate the rotation angle $\theta$ of the camera. Recall that the 2D rotation matrix is

$$R(\theta) = \begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}.$$