

## Answer on Question #56877, Math, Geometry

### Problem.

Determine the range of values of  $\theta \in [0, 2\pi]$  for which the point  $(\cos \theta, \sin \theta)$  lies inside the triangle formed by the lines  $x + y = 2$ ;  $x - y = 1$  &  $6x + 2y - 10 = 0$ .

### Answer.

These lines don't form a triangle.

### Solution.

Let's determine the coordinates of the points of intersection of the lines given.

$$\begin{cases} x + y = 2, \\ x - y = 1; \end{cases} \begin{cases} 2x = 3, \\ 2y = 1; \end{cases} \begin{cases} x = 1.5, \\ y = 0.5. \end{cases} (1.5, 0.5).$$

$$\begin{cases} x + y = 2, \\ 6x + 2y - 10 = 0; \end{cases} \begin{cases} x + y = 2, \\ 3x + y = 5; \end{cases} \begin{cases} 2x = 3, \\ x + y = 2; \end{cases} \begin{cases} x = 1.5, \\ y = 0.5. \end{cases} (1.5, 0.5).$$

$$\begin{cases} x - y = 1, \\ 6x + 2y - 10 = 0; \end{cases} \begin{cases} x - y = 1, \\ 3x + y = 5; \end{cases} \begin{cases} 4x = 6, \\ x - y = 1; \end{cases} \begin{cases} x = 1.5, \\ y = 0.5. \end{cases} (1.5, 0.5).$$

So, the three lines are concurrent, thus don't form the triangle.