Polar coordinates problems

1. Convert the following points from polar to Cartesian coordinates:
   a. \((1, -\frac{\pi}{6})\)
   b. \((3, \frac{5\pi}{8})\)
   c. \((2, \frac{2\pi}{3})\)
   d. \((3, \frac{3\pi}{2})\)
   e. \((1, \frac{\pi}{8})\)

2. Convert the following points from Cartesian to polar coordinates
   a. \((4, -4)\)
   b. \((-\sqrt{3}, 1)\)
   c. \((-2, 0)\)

3. What is the curve \(r(\theta) = \tan(\theta)\) in Cartesian coordinates?

4. Express the curve \(x + y = 1\) in terms of polar coordinates.

5. Sketch the following functions
   a. \(r(\theta) = 2\cos(\theta)\)
   b. \(r(\theta) = 4\sin(2\theta)\)

Polar coordinate arc length and area problems

1. What is the perimeter of the cardiod \(r(\theta) = 1 + \cos(\theta)\)?

2. What is the total area inside the four-leaf clover \(r(\theta) = \sin(2\theta)\)?