1. Convert the following polar equations into rectangular coordinates, or rectangular to polar expressing your solution in the form \( r = f(\theta) \).

(a) \( r = \frac{4}{2 \sin \theta - \cos \theta} \)

(b) \((x + 2)^2 + y^2 = 4\)

2. Find the length of the polar curve \( r = \sec \theta \) for \( \theta \in [0, \pi/4] \).
Given:  \( \sin(2x) = 2 \sin x \cos x \)  \\
\( \sin^2 x = (1 - \cos(2x))/2 \)  \\
\( \cos^2 x = (1 + \cos(2x))/2 \)

3. Polar area and graphing.

(a) Sketch the curves \( r = 1 \) and \( r = 1 + \cos \theta \).

(b) Find the area inside the curve \( r = 1 + \cos \theta \) but outside the curve \( r = 1 \).

Shade the region to indicate the area you are trying to find.