7 Dec 2018

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

$$
r=\frac{4}{2 \sin \theta-\cos \theta}
$$

(b) $1 \quad(x+2)^{2}+y^{2}=4$
2. 3 Find the length of the polar curve $r=\sec \theta$ for $\theta \in[0, \pi / 4]$.

Given: $\sin (2 x)=2 \sin x \cos x\left\|\sin ^{2} x=(1-\cos (2 x)) / 2\right\| \cos ^{2} x=(1+\cos (2 x)) / 2$
3. Polar area and graphing.
(a) 2 Sketch the curves $r=1$ and $r=1+\cos \theta$.

(b) 3 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.

