1. Convert the following polar curves to rectangular coordinates.
   
   (a) \( r = 4 \cos \theta \)
   
   (b) \( r = \frac{2}{3 \cos \theta - 4 \sin \theta} \)

2. Carefully sketch the curve \( r = 1 - 2 \cos \theta \) on the provided polar grid.

3. Find the area inside \( r = \sqrt{2} \cos 5\theta \) and outside \( r = 1 \), the shaded region in the figure. You may find the identity \( \cos^2 x = \frac{1}{2} (1 + \cos 2x) \) helpful.