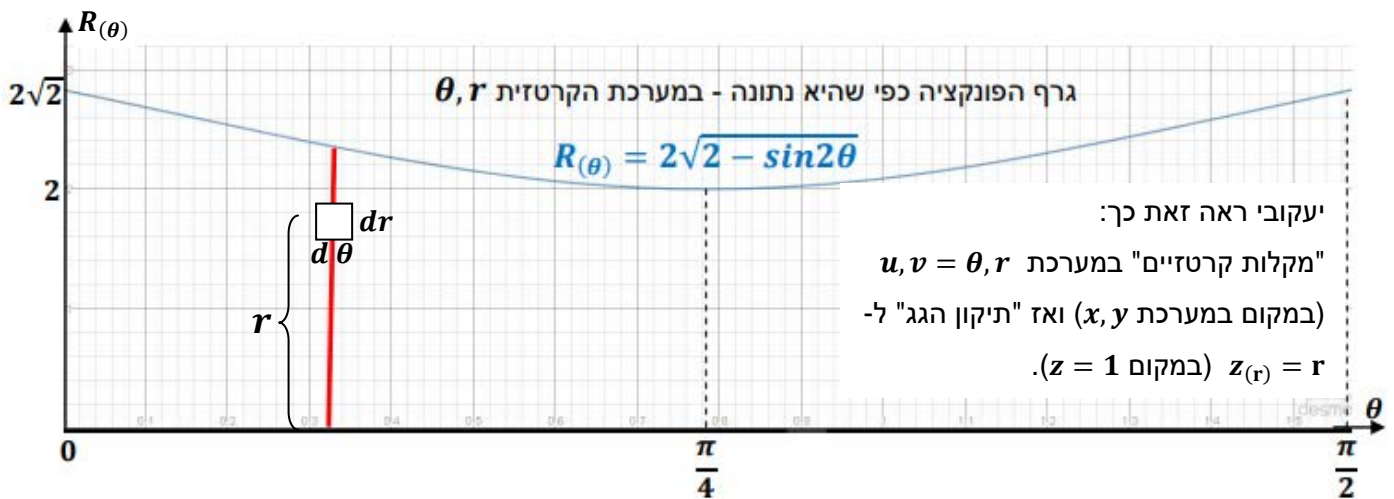
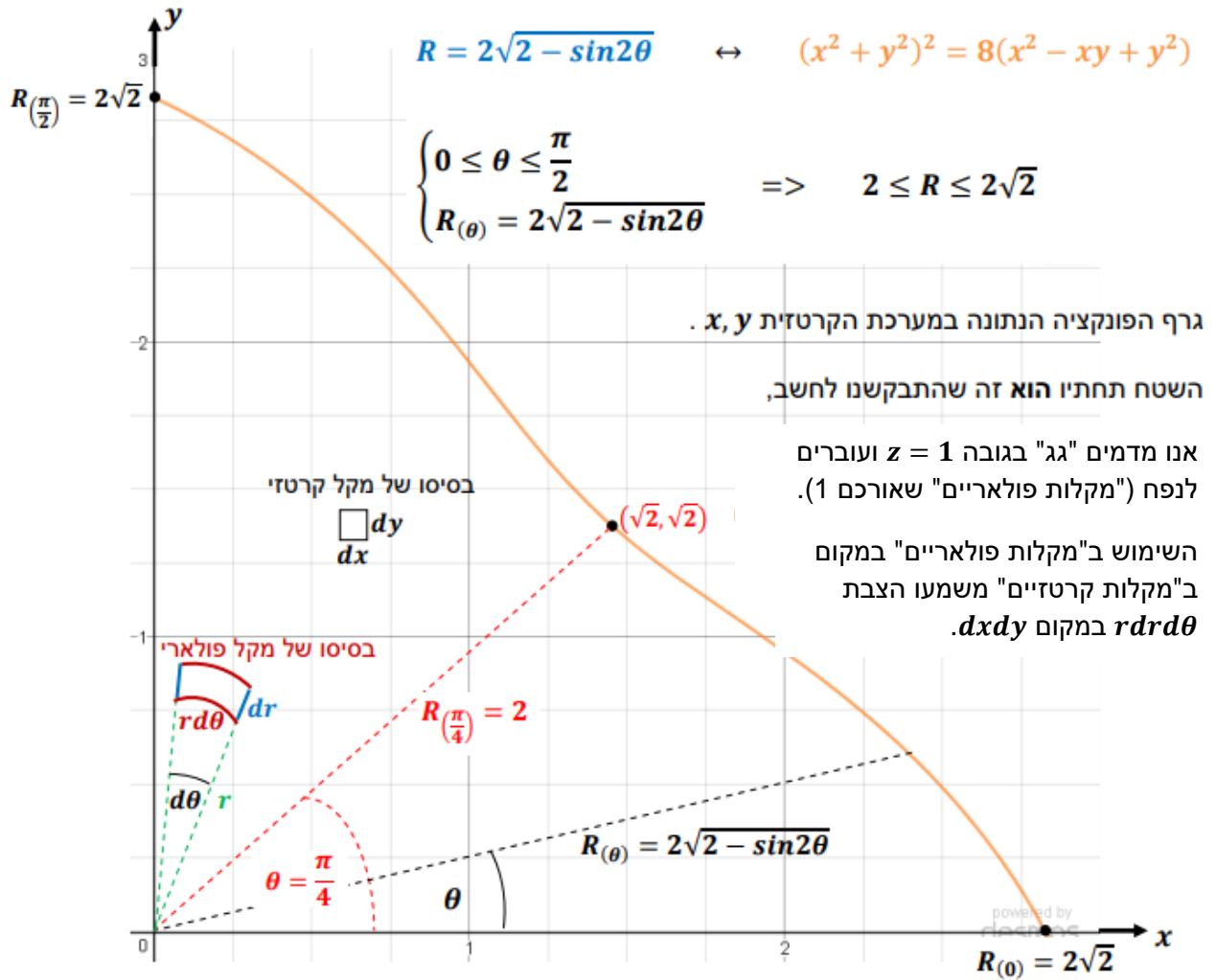


מצא את השטח ברביע הראשון שנוצר על ידי חיתוך עם העקומה $r = 2(2 - \sin 2\theta)^{\frac{1}{2}}$



$$\int_{\theta=0}^{\frac{\pi}{2}} \int_{r=0}^{2\sqrt{2-\sin 2\theta}} r dr d\theta = \frac{1}{2} \int_0^{\frac{\pi}{2}} r^2 \Big|_0^{2\sqrt{2-\sin 2\theta}} d\theta = \frac{1}{2} \int_0^{\frac{\pi}{2}} 4(2 - \sin 2\theta) d\theta =$$

$$= 2 \int_0^{\frac{\pi}{2}} (2 - \sin 2\theta) d\theta = 2 \left[2\theta + \frac{\cos 2\theta}{2} \Big|_0^{\frac{\pi}{2}} \right] = 2 \left(\pi - \frac{1}{2} - \frac{1}{2} \right) = 2(\pi - 1) \approx 4.28$$