$$\overline{x} = \frac{2r \sin\theta}{3\theta}$$

Seja $\overline{x} := \frac{r}{2}$

$$\overline{x} = \frac{r}{2} = \frac{2r \sin\theta}{3\theta}$$
$$\Rightarrow$$
$$\frac{r}{2} \times \frac{1}{r} = \frac{2r \sin\theta}{3\theta} \times \frac{1}{r}$$
$$\Rightarrow$$
$$\frac{1}{2} = \frac{2 \sin\theta}{3\theta}$$
$$\Rightarrow$$
$$\dots$$
$$\Rightarrow$$
$$f(\theta) := \cos\theta - \frac{3}{4}\theta = 0$$