

$$a_0 = \frac{1}{2\pi} \int_0^{2\pi} f(\theta) d\theta$$

$$a_0 + \sum_{j=0}^{\infty} a_j (a_j \cos j\theta + b_j \sin j\theta) = f(\theta)$$

$$a_j a_j \int_0^{2\pi} \cos^2 j\theta d\theta = \int_0^{2\pi} f(\theta) \cos j\theta d\theta$$

$$a_j = \frac{1}{\pi a_j} \int_0^{2\pi} f(\theta) \cos j\theta d\theta$$

radius of $U = B_0(\theta)$.

$$b_j = \frac{1}{\pi a_j} \int_0^{2\pi} f(\theta) \sin j\theta d\theta$$