

$$\pi(x_{\text{new}} | x) = \int \pi(x_{\text{new}}, \theta | x) d\theta = \int \pi(x_{\text{new}} | \theta, x) \underline{\pi(\theta | x)} d\theta$$

$$= \int \pi(x_{\text{new}} | \theta) \pi(\theta | x) d\theta \quad \text{POSTERIOR PREDICTIVE}$$

$$\pi(x) = \int \pi(\theta, x) d\theta = \int \underline{\pi(x | \theta)} \underline{\pi(\theta)} d\theta \quad \text{Prior predictive}$$

$$\pi(x) = \frac{\pi(x | \theta) \pi(\theta)}{\pi(\theta | x)} =$$

$$\pi(x_{\text{new}} | x) = \frac{\pi(x_{\text{new}} | \theta) \pi(\theta | x)}{\pi(\theta | x_{\text{new}}, x)} =$$