$p(\theta|y) = \text{Beta}(y+1, n-y+1)$ $n=100$ $y=48$

$\{0=\theta_1, \theta_2, \theta_3, \theta_4, \ldots, \theta_{10}=1\}$

$\theta_2 = \frac{1}{9}$, $\theta_3 = 2/9$

$$\frac{p(\theta_i|y)}{\sum_{j=1}^{10} p(\theta_j|y)}$$

Step 1: u ← runif (1) $u_1 = 0.356579$

Step 2: use inverse cdf to identify the "closest" θ_i

cdf: $F(w) = \sum_{v \le w} p(v)$

$\{\theta_1, \theta_2, \theta_3, \theta_4, \theta_5, \theta_6, \theta_7, \theta_8, \theta_9, \theta_{10}\}$

0, 0, 0, 0.0093, 0.7024, 0.2877, 0.0006, 0, 0, 0

$F(\theta_4) = 0.0093$

$F(\theta_5) = 0.0093 + 0.7024 = 0.7117$

← which is closer to u_1?

$|u_1 - F(\theta_4)| = 0.347279$

$|u_1 - F(\theta_5)| = 0.3551208$

$\boxed{\theta_4}$ ← randomly drew

$u_2 = 0.7420794833451 51$

$F(\theta_4) = 0.0093$, $F(\theta_5) = 0.7117$, $F(\theta_6) = .7117 + .2877 = 0.9994$

$\boxed{\theta_5}$