$$P(F_h \geq 140 | p_h = 0.5, N = 250) = \sum_{F_h=140}^{250} \binom{250}{F_h} 0.5^{250} = 0.0332 \tag{1}$$

$\mathcal{H}_0$: Coin is fair
$\mathcal{H}_1$: Coin is biased
D : Data of 140 heads in 250 spins
F_h : 140 (frequency of heads)
F_t : 110 (frequency of tails)
p_h : Probability of heads
Getting model comparison.

$$P(\mathcal{H}_0|D) = \frac{P(D|\mathcal{H}_0)P(\mathcal{H}_0)}{P(D)} \tag{2}$$

$$P(\mathcal{H}_1|D) = \frac{P(D|\mathcal{H}_1)P(\mathcal{H}_1)}{P(D)} \tag{3}$$

$$P(\mathcal{H}_0) = P(\mathcal{H}_1) = \frac{1}{2} \tag{4}$$

$$\frac{P(\mathcal{H}_1|D)}{P(\mathcal{H}_0|D)} = \frac{P(D|\mathcal{H}_1)}{P(D|\mathcal{H}_0)} \tag{5}$$

Done getting model comparison.
Getting $P(D|\mathcal{H}_1)$:

$$P(D|\mathcal{H}_1) = \int_0^1 \mathrm{d}p_h P(D|P_h, \mathcal{H}_1) P(p_h|\mathcal{H}_1) \tag{6}$$

$$P(D|P_h, \mathcal{H}_1) = p_h^{F_h}(1 - p_h)^{F_t} \tag{7}$$

$$P(p_h|\mathcal{H}_1) = 1 \tag{8}$$

$$P(D|\mathcal{H}_1) = \int_0^1 \mathrm{d}p_h P(D|P_h, \mathcal{H}_1) = \int_0^1 \mathrm{d}p_h p_h^{F_h}(1 - p_h)^{F_t} \tag{9}$$

$$B(x,y) = \int_0^1 \mathrm{d}t t^{x-1}(1-t)^{y-1} = \frac{\Gamma(x)\Gamma(y)}{\Gamma(x+y)} \tag{10}$$

$$P(D|\mathcal{H}_1) = B(F_h+1, F_t+1) = \frac{\Gamma(F_h+1)\Gamma(F_t+1)}{\Gamma(F_h+F_t+2)} \tag{11}$$

$$\Gamma(x) = (n-1)! \tag{12}$$

$$P(D|\mathcal{H}_1) = \frac{(F_h+1)!(F_t+1)!}{(F_h+F_t+1)!} = \frac{F_h!F_t!}{(F+1)!} \tag{13}$$

End of getting $P(D|\mathcal{H}_1)$.
Getting $P(D|\mathcal{H}_0)$:

$$p_f = \frac{1}{2} \tag{14}$$

$$P(D|\mathcal{H}_0) = \left(\frac{1}{2}\right)^{F_h} \left(1 - \left(\frac{1}{2}\right)^{F_t}\right) = \left(\frac{1}{2}\right)^{F} \tag{15}$$

Done getting $P(D|\mathcal{H}_0)$.
Computing model comparison:

$$\frac{P(\mathcal{H}_1|D)}{P(\mathcal{H}_0|D)} = \frac{\frac{F_h!F_t!}{(F+1)!}}{\left(\frac{1}{2}\right)^F} = \frac{\frac{140!110!}{251!}}{\left(\frac{1}{2}\right)^{250}} \cong 0.48 \tag{16}$$

End computing model comparison.