Prob

1. $\frac{15}{15}\cdot\frac{14}{15}\cdot\frac{13}{15}\cdot\frac{12}{15}\cdot\frac{11}{15}\cdot\frac{10}{15}\cdot\frac{9}{15}\cdot\frac{8}{15}$

$= .101$

2. $5\cdot4\cdot7\cdot6\cdot5 = 4200$

$P(\text{criteria}) = \frac{4200}{10^3} = .042$

$P(\text{not criteria}) = \frac{479}{500} = .958$

3. $P(A) = \left(\binom{3}{2}\left(\frac{1}{2}\right)^2\left(\frac{1}{2}\right)\right) + \binom{3}{3}\left(\frac{1}{2}\right)^3(1) = \frac{1}{2}$

$P(B) = \frac{1}{6}\cdot\frac{1}{6} = \frac{1}{36}$

$P(A\cap B) = \frac{1}{72}$

$P(A)\cdot P(B) = \frac{1}{72}$, independent

4. $P(\text{Flush}) = \frac{\binom{4}{1}\binom{13}{5}}{\binom{52}{5}}$

$= .00199$

$= 505.05$ hands

5. $P(\text{star}) = .75$ $\quad P(E|F) = \binom{5}{4}(.7)^4(.3) = .36015$ $\quad P(E|F^c) = .15675$

$P(\text{star played}) = P(F|E) = \frac{P(E|F)P(F)}{P(E|F)P(F) + P(E|F^c)P(F^c)} = .87 - .878$