① $\frac{15}{15} \times \frac{14}{15} \times \frac{13}{15} \times \frac{12}{15} \times \frac{11}{15} \times \frac{10}{15} \times \frac{9}{15} \times \frac{8}{15} = \boxed{\frac{\frac{15!}{7!}}{15^8}}$

Question # 1 2 3 4 5 6 7 8

② Digit # 1 2 3 4 5

$\frac{5}{10} \times \frac{4}{10} \times \frac{7}{10} \times \frac{6}{10} \times \frac{5}{10} = \frac{5 \times 4 \times 7 \times 6 \times 5}{10^5}$

to get one number

$\frac{5 \times 4 \times 7 \times 6 \times 5}{10^5} \times$

③ Yes, they are independent

④ $P(\text{getting flush}) = \binom{4}{1}\binom{13}{5} = \left(\frac{4!}{1!(4-1)!}\right)\left(\frac{13!}{5!(13-5)!}\right)$

$= \frac{13!\ 4!}{3!\ 5!\ 8!}$

There is $\frac{3!\,5!\,8!}{13!\,4!}$ expected number of hands to be dealt.

⑤ E = team won $\frac{4}{5}$ games $\qquad P(E|F) = (70\%)^4$

F = superstar play $\qquad P(F) = 75\%$

solving for $P(F|E)$ $\qquad P(E) = (50\%)^4$

$P(F|E) = \frac{(70\%)^4 (75\%)}{(50\%)^4}$