$$p_k = \delta_{k1} p_1 + \delta_{k2} p_2 + \delta_{k3} p_3$$

weird notation

there seems to be an error in the exercise,

$$\delta_{k;i} = \begin{cases} 3 \\ 2 \\ 1 \end{cases}$$

$$p(k=1) = 3p_1$$
$$p(k=2) = 2p_2$$
$$p(k=3) = p_3$$

(1)

$$\langle k \rangle = \sum_k p_k k = 3p_1 + 4p_2 + 3p_3$$
$$\langle k^2 \rangle = \sum p_k k^2 = 3p_1 + 8p_2 + 9p_3$$

(2) Molloy - Reed - Condition

$$K = \frac{\langle k^2 \rangle}{\langle k \rangle} > 2$$

$$2 < \frac{3p_1 + 8p_2 + 9p_3}{3p_1 + 4p_2 + 3p_3}$$

$$6p_1 + \cancel{8p_2} + 6p_3 < 3p_1 + \cancel{8p_2} + 9p_3$$
$$3p_1 < 3p_3$$

$$\underline{\underline{p_1 < p_3}}$$

(3) if $k < 2$ the network will lack a giant component.
the condition says that it must be more likely to have a degree $k=3$ node than one with $k=1$. $k=2$ does not appear in the condition because those elements mainly constitute a <u>chain</u> that does neither hurt nor build a giant component.