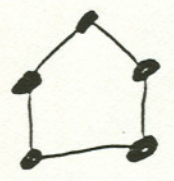


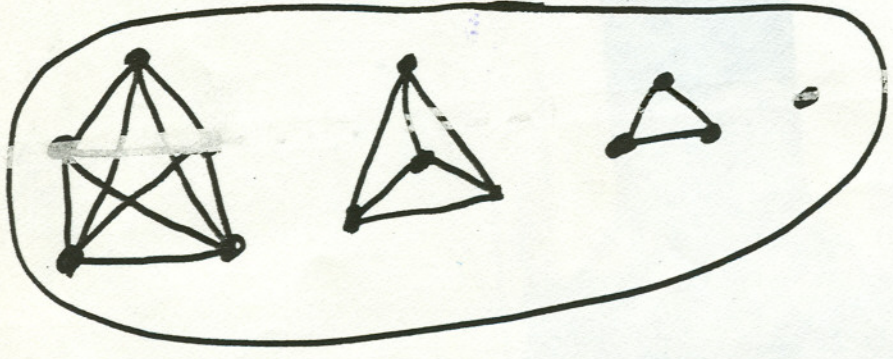
5) What is the chromatic polynomial $P(G, x)$ of the following graph?



$$P(G, x) = P(\text{path of 5 vertices}) - P(\text{square}) = x(x-1)^4 - (P(\text{path of 4 vertices}) - P(\text{triangle}))$$

$$= x(x-1)^4 - x(x-1)^3 + x(x-1)(x-2)$$

6) Draw a graph with chromatic polynomial equal to $P(G, x) = x^4(x-1)^3(x-2)^3(x-3)^2(x-4)$



7) a) In a graph with 16 edges, what is the minimum possible number of vertices? **7**

b) In a connected graph with 16 edges, what is the maximum possible number of vertices? **17**