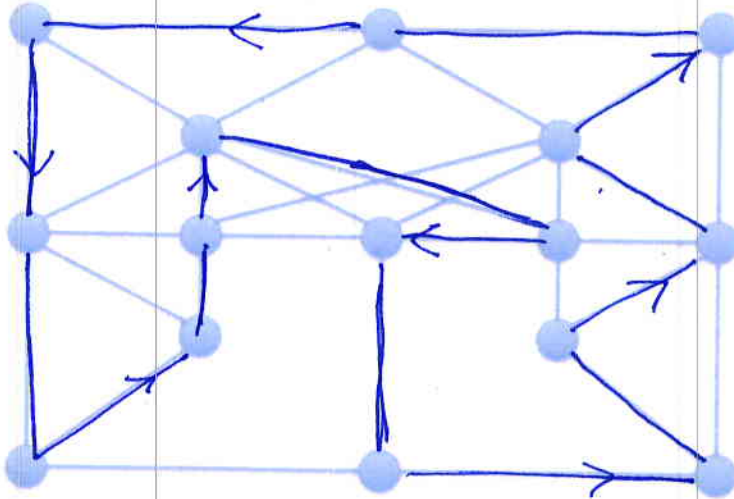


Instructions: Show all work. Answer each question as completely as possible. Use exact values. For counting problems you may use scientific notation (with three significant figures) for any numbers larger than a million.

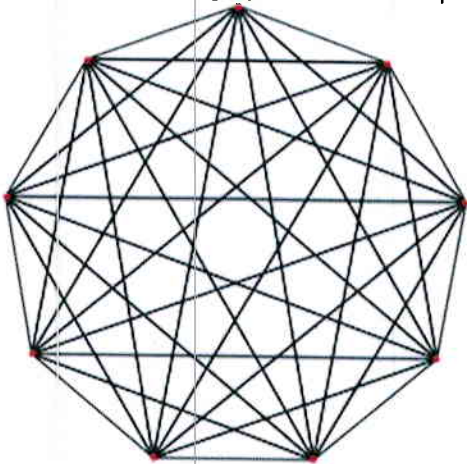
1. Determine if the graph below has a Hamilton circuit or path. If it does, find one.



yes
it has a circuit

(Answers for
specific
circuits may
vary)

2. Determine if the graph below is complete.



Yes, this is a K_9 graph

3. If a complete graph has 11 vertices, how many edges must it have?

$$1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 = \frac{10(11)}{2} = 55$$

for K_n add $1 + 2 + 3 + \dots + n - 1 = \frac{n(n-1)}{2}$