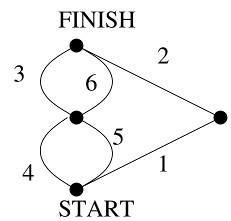
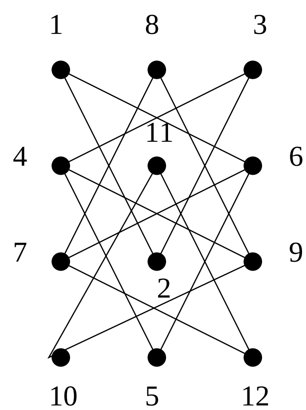
1. Yes, by the demolition of the bridge and route given below.





2. Observe that on an odd board there will always be one more square of one colour (say black) than the other, and a knight will always move from a square to a square of the other colour. Hence one can never find a knight's tour on an odd board since to get to all the squares once you would need to move

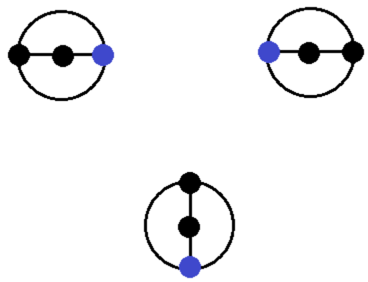
$$BWBWBW\ldots WB$$

but there is no way to return from a black square to a black square without visiting an already visited white square.

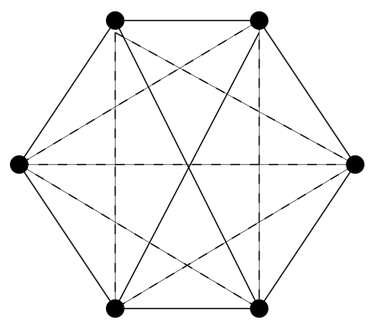
3.

$$((4t-5w)(x+y))((((2x+1)+y)\div(3+5(w^2)))+(y+(w+z))).$$

4. Each vertex has 3 "lives". After no moves the total number of lives left is $3n$. After one move the total number of lives left is $3(n+1)-4$. After 2 moves it is $3(n+2)-8$ and after p moves it is $3(n+p)-4p$. The game must end when there are no lives left, i.e. $3(n+p)-4p=0$ or $3n=p$. However the last vertex added can't have had all its lives used up, so the number of moves must be less than $3n$ i.e. at most $3n-1$.



5. No.



6. First note that if G is a simple graph on n vertices then the maximum degree of a vertex is $n-1$, and this vertex must be connected to every other vertex.

Now we do a proof by contradiction. Assume that the n vertices of G each have different degree, then by our above observation the degrees of the vertices must be $0, 1, 2, \ldots, n-1$. However the vertex of degree $n-1$ must be connected to every other vertex, and hence no vertex of degree 0 can exist, which is a contradiction.