Directions: Answer the problem given below.

1. Draw a tree T on 6 vertices with exactly 3 leaves.
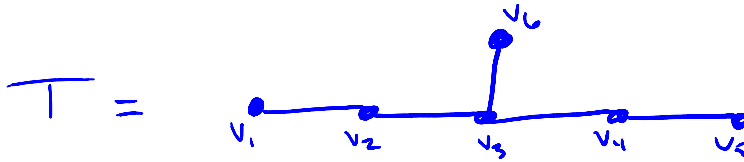
2. A connected graph G has 8 vertices, whose degrees are $1, 1, 1, 2, 2, 2, 3, 4$. Is G a tree? Why or why not?

No : total degree is $1 + 1 + 1 + 2 + 2 + 2 + 3 + 4 = 16 = 2(8)$,

so G has 8 edges : if G were a tree, it would have exactly 7 edges

(since it has $n = 8$ vertices).

3. A graph H has 10 vertices, 9 edges, and H contains a circuit. Is H connected?

No: a connected graph on $n = 10$ vertices with $9 = n-1$

edges must be a tree, but trees have no circuits

whereas H has one.