1.

The maximum number of squares a queen can attack in any column is 3 (by going diagonally up, diagonally down or sideways). Therefore, the lower bound of our branching factor is 3.

The first queen can be placed into 'n' squares. The second queen can be placed into 'n-3' squares as the previous queen can attack 3 squares from any column. Therefor, the third queen can be placed into 'n-6' squares, the fourth queen into 'n-12' squares and so on.

We can represent this sample as this:

$\Pi^{|x-3|-1}$ (n-3x), where x is the x^{th} queen that is being placed starting from x=0

$= [\Pi^{|n-3|-1} (n-3x)^3]^{1/3}$

$= [(n-3(|n-3|-1))!\ \Pi^{|n-3|-2} (n-3x)(n-3x-1)(n-3x-2)]^{1/3}$

$= (n!)^{1/3}$

= 3√n!

The number of states that is feasible to exhaustively explore is subjective. Let us consider 10^{10} or more states as being infeasible. In this case, n=30 would be the largest n before the number of states becomes infeasible.

2. (Working on Separate Scanned Attachment)

Depth First Search: Start -> M -> Q -> Goal

Breadth First Search: Start -> M -> Q -> N -> Q -> Goal

Uniform Cost Search: Start -> N -> P -> Goal

Greedy Search: Start -> Q -> Goal

3.