Q 1 For tic-tac-toe

1) Minimax (plain) (9! total moves)
2) Alpha beta pruning
3) depth - limited Search

all three will terminate.

For chess

1) Minimax (plain) possibly never terminate
2) Alpha beta search can possibly never terminate
3) depth - limited Search will terminate

For tic-tac-toe maximum depth is 9

So, total no. of moves can be 9! . so

1. plain minimax can terminate.
2. Alpha beta search : in worst case requires similar or lesser moves, so this will also terminate.
3. Depth limited Search - we can always select a limit such that algorithm will terminate.

For chess

1) Plain Minimax : $O(b^m)$ $b = 35$ $m = 100$

so plain mimmax can possibly never terminate

2) Alphabeta search : $O(b^{m/2})$, 35^{50} is still big value, so it can possibly never terminate

3) depth - limited search : we can always set limit such that algorithm will terminate