

GRAPH THEORY: CLASS 10

1) Give an example of a graph G with the following properties

- a) $\kappa(G) = 1, \lambda(G) = 1$ and $\delta(G) = 1$.
- b) $\kappa(G) = 1, \lambda(G) = 1$ and $\delta(G) = 10$.
- c) $\kappa(G) = 1, \lambda(G) = 10$ and $\delta(G) = 10$.

2) Is there a fixed integer M such that every graph of minimum degree at least M is 1-connected?

3) Given graphs G_1 and G_2 below.

- a) Find the minimum number of vertices separating A from B.
- b) Find the maximum number of disjoint A-B paths.
- c) Use Menger's Theorem to verify your result.

4) Use Menger's theorem to show that any two vertices of a 2-connected graph lie on a common cycle.