



clique graph of  $T$

There are many applications where we want to find some satisfactory notion of a centre for a graph. This will often depend on the particular circumstances. For a node  $v \in V_T$ , we define its eccentricity by

$$e(v) := \max \{ d(u, v) \mid u \in V_T \}.$$

Then the radius of  $T$  is

$$r(T) := \min \{ e(v) \mid v \in V_T \}$$

and the diameter of  $T$  is

$$d(T) = \max \{ e(v) \mid v \in V_T \}.$$

In this spirit, we can then define

- $v$  is a central node of  $T$  if  $e(v) = r(T)$ .
- $v$  is a peripheral node of  $T$  if  $e(v) = d(T)$ .
- the centre of  $T$  is  $C(T) := \{ v \mid v \text{ central} \}$ .
- the periphery of  $T$  is  $\partial T := \{ v \mid v \text{ peripheral} \}$ .

Notice that trees will have either one central node (a central tree) or two central nodes (a bicentral tree).