

Homework #1

1. Draw the PV-curve for the following cases, and for each, determine the loadability.

- a. $B=2$, $|V_1|=1.0$, $\text{pf}=0.97$ lagging
- b. $B=2$, $|V_1|=1.0$, $\text{pf}=0.95$ lagging
- c. $B=2$, $|V_1|=1.06$, $\text{pf}=0.97$ lagging
- d. $B=10$, $|V_1|=1.0$, $\text{pf}=0.97$ lagging

Identify the effect on loadability of power factor, sending-end voltage, and line reactance.

2. Draw the QV-curves for the following cases, and for each, determine the maximum QD.

- a. $B=1$, $|V_1|=1.0$, $\text{PD}=0.1$
- b. $B=1$, $|V_1|=1.0$, $\text{PD}=0.2$
- c. $B=1$, $|V_1|=1.06$, $\text{PD}=0.1$
- d. $B=2$, $|V_1|=1.0$, $\text{PD}=0.1$

Identify the effect on maximum QD of real power demand, sending-end voltage, and line reactance.