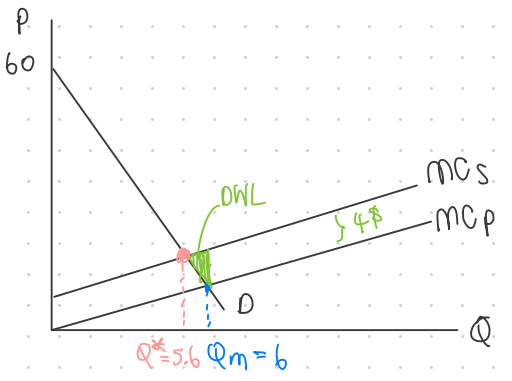
Exercise

Demand : $P = 60 - 7Q$

Supply : $MC = 3Q$, Pollution cost = $4



1. Draw a graph showing demand curve, MC_P, MC_S

2. Find private equilibrium P_m, Q_m when externalities are ignored

$P = 60 - 7Q = 3Q$ (MC)

$60 = 10Q$

$\boxed{Q_m = 6}$

$P_m = 60 - 7(6) = 18$

3. Find social optimal allocation (P^*, Q^*)

$P = MCS$

$60 - 7Q = 3Q + 4$

$56 = 10Q$

$\boxed{Q^* = 5.6}$

$\boxed{P^* = 60 - 7(5.6) = 20.8}$

4. Calculate DWL

$= \frac{1}{2} \times base \times height$

$= \frac{1}{2} \times 0.4 \times 4$

$= 0.8 = DWL$