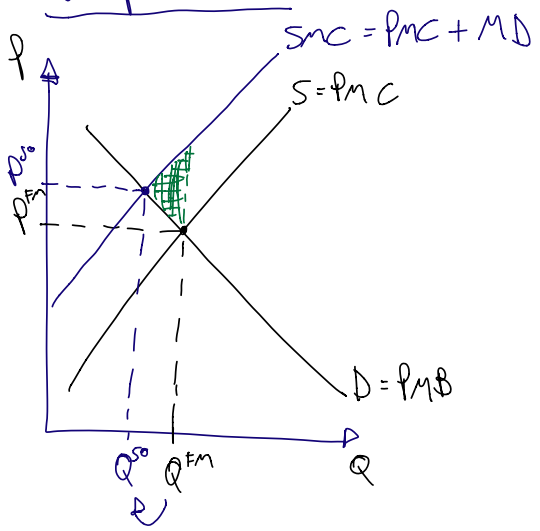
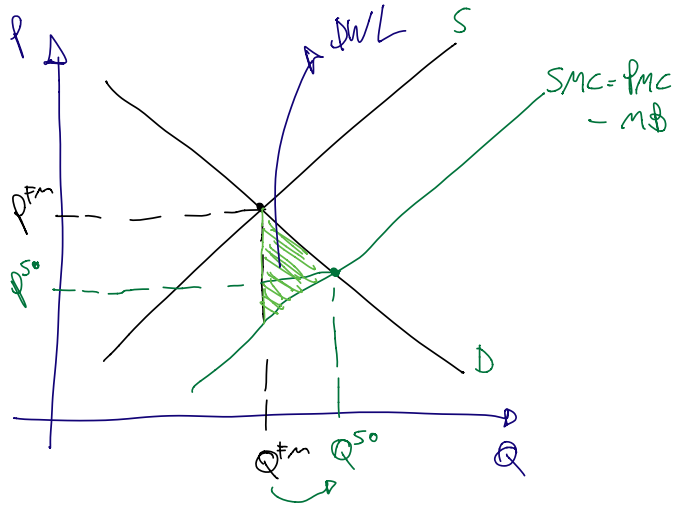
SECTION 9

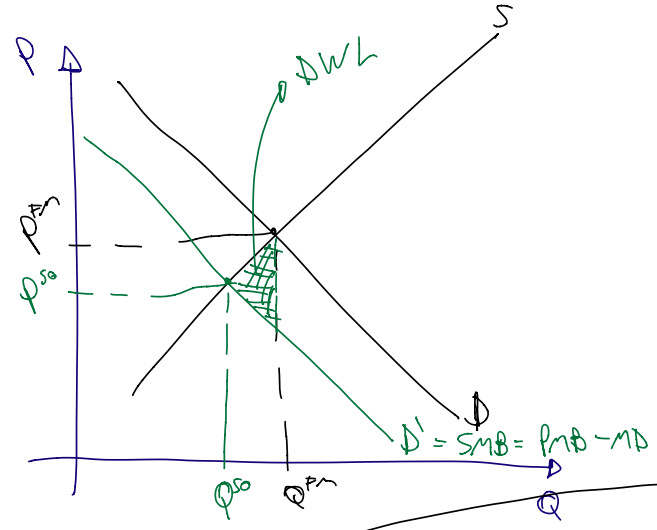
Overproduction



Underproduction



Overconsumption



1.2.1) $Q^D = 1000 - 4P$ → $Q = 1000 - 4(200)$

$Q^{FM} = 200$

$Q^S = -200 + 2P$ →

$MD = 6$ / unit

$4P = 1000 - Q^D$

$P = 250 - \frac{Q^D}{4}$

$1000 - 4P = -200 + 2P$

$6P = 1200$

$P^{FM} = 200$

– Externality price added to producers (i.e. overproduction):

$P^S = P^D - 6$

$2P^S = Q^S + 200$

$P^S = 100 + \frac{1}{2}Q^S$

$Q^S = -200 + 2P^S = -200 + 2P^D - 6$

$Q^D = 1{,}000 - 4P^D$ $\quad Q^D_{SO} = 1{,}000 - 4(202)$

$= 1{,}000 - 808 = \boxed{192}$

$-200 + 2P^D - 12 = 1000 - 4P^D$

$6P^D = 1200 + 12$

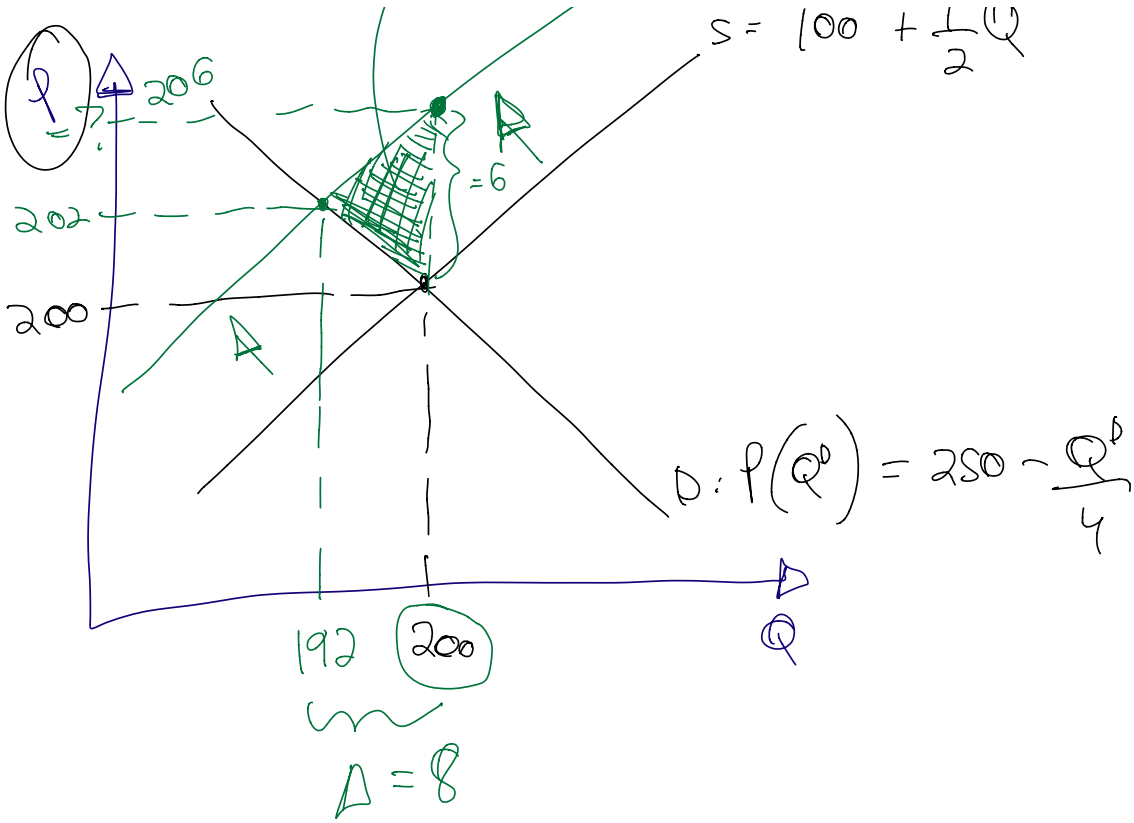
$P^D_{SO} = \frac{1212}{6} = \boxed{202}$

$(Q_{SO}, P_{SO}) = (192, 202)$

$\Delta = 200 - 192 = \boxed{8}$

$\Delta DWL = \frac{6 \times 8}{2} = \boxed{24}$

$P'(Q^S) = 100 + \frac{1}{2}Q^S + 6$



$$P^1(200) = 100 + \frac{1}{2}Q^S + 6$$

$$= 100 + \frac{200}{2} + 6 = \boxed{206}$$

1.3.1) $P_d = 20 - \frac{1}{2}Q$

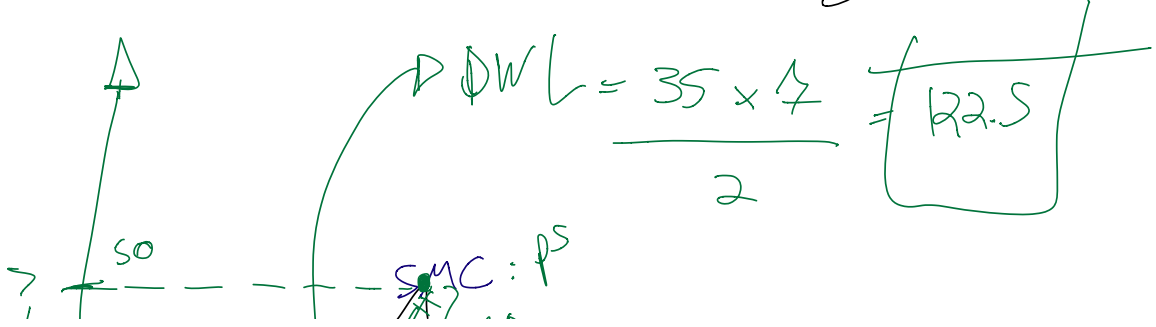
$P_s = 5 + Q$ → $P^S = 5 + 10 = \boxed{15}$

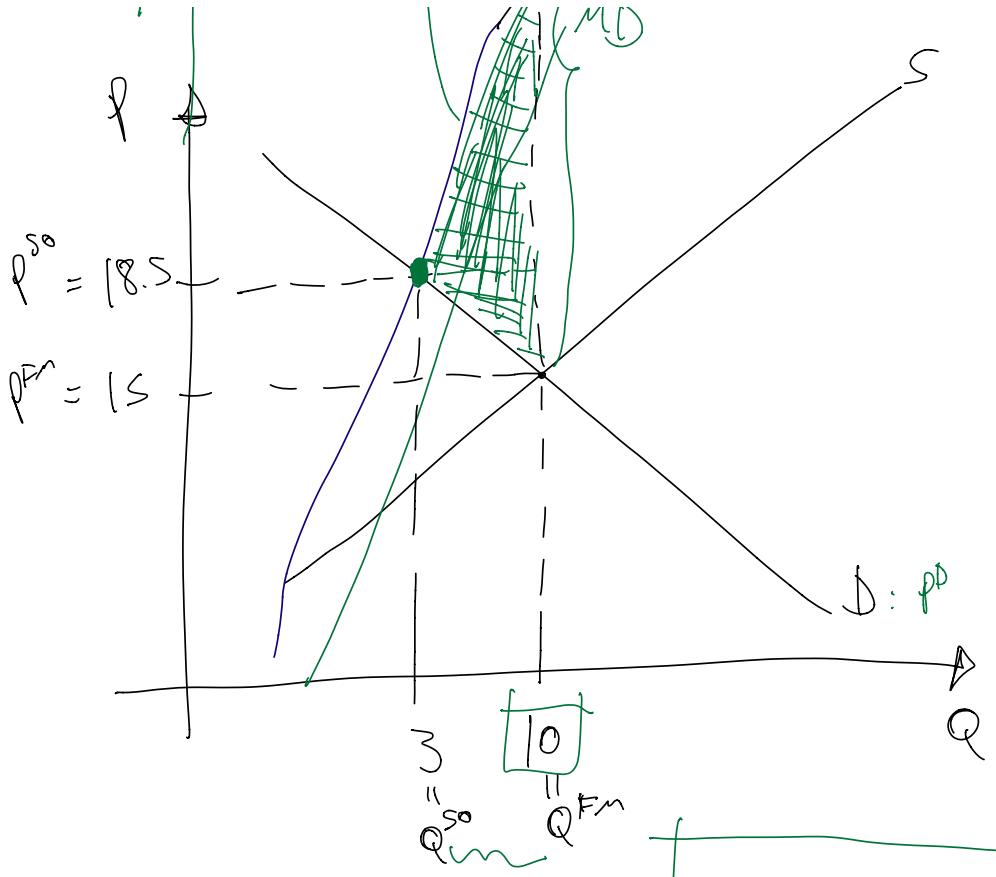
$MD = 3.5\ Q$

a) FM: $20 - \frac{1}{2}Q = 5 + Q$

$\frac{3}{2}Q = 15^S$

$\boxed{Q^{FM} = 10}$





$$SMC = P^S + MD = \boxed{5 + Q + 3.5Q}$$

$P'(10) = 5 + 4.5(10)$

$= 50$

$$P^D = SMC$$

$$20 - \frac{1}{2}Q = 5 + 4.5Q$$

$$5Q = 15 \Rightarrow \boxed{Q_{SO} = 3}$$

$$P^D = 20 - \frac{1}{2}(3) = \boxed{18.5}$$

$$SMC = P^S = S + Q + t$$

$$= 18.5 \qquad = 3$$

$$t = 18.5 - 8$$

$$\boxed{t = 10.5}$$