

1.a) Profit maximization : $MRP = MFC$

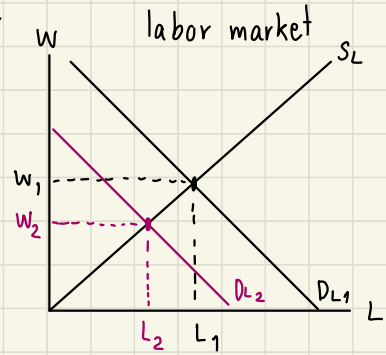
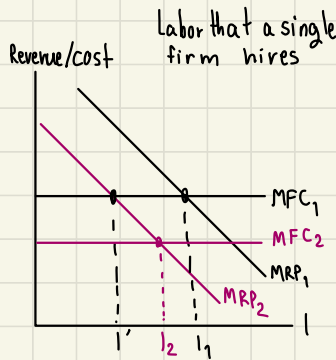
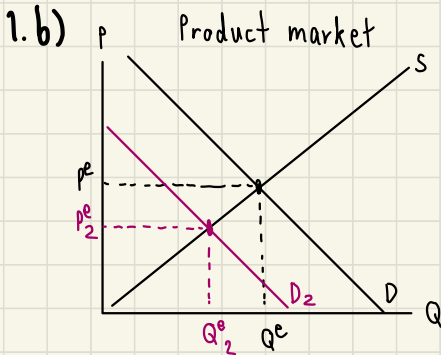
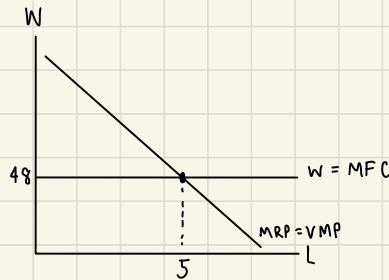
In perfectly competitive market, $MR = P$ and $MFC = W$

So, $MRP = W$

$P = 12, W = 48$

Unit of labor	Marginal product of labor	P	MRP ^{benefit}	Wage ^{cost}
2	12	12	144	48
3	8	12	96	48
4	6	12	72	48
5	4	12	48	48
6	2	12	24	48

∴ This firm will choose 5 units of labor as input for its production to maximize profit.



• When there is a sudden economic recession driving consumers' purchasing power downward, the demand in the product market shifts to the left, decreasing price and quantity. The decrease in price reflects to MR that also goes down. Lower MR reduces MRP from MRP_1 to MRP_2 , but now MFC doesn't change. The new equilibrium of labor that this firm hires shifts from L_1 to L_1' . Every single firm demands less labor. So, labor demand in the labor market shifts from DL_1 to DL_2 . Decreasing demand for labor will drive the wage downward from W_1 to W_2 , and also decrease the equilibrium number of labor from L_1 to L_2 in the labor market. So, the units of labor hired by this firm will decrease from L_1 to L_2 .

$$\begin{aligned} 2.a) \text{ Lerner's index} &= \frac{P - MC}{P} \\ &= \frac{1 - 0.2}{1} = 0.8 \approx 80\% \end{aligned}$$

∴ Company A has high market power

$$\begin{aligned} 2.b) \quad A = 50, D = 20, T = 30 \\ \text{HHI index} &= (50)^2 + (20)^2 + (30)^2 = 3,800 \end{aligned}$$

2.c) D and T decide to merge their company.

$$D + T = 20 + 30 = 50$$

$$\text{new HHI index} = (50)^2 + (50)^2 = 5,000$$

∴ The new HHI index is higher than the old HHI index, which means that it has less competition or high concentrated market.

3.a) Market power

3.b) Externalities

3.c) Moral hazard

3.d) Public goods

3.e) Not a market failure