

1.

$$\text{A) } p_1 x_1^A + p_2 x_2^A = 20p_1$$

$$p_1 x_1^B + p_2 x_2^B = 20p_2$$

$$\text{B) } x_1^A = \frac{\frac{1}{2}(20p_1)}{p_1} = 10$$

$$x_2^A = \frac{\frac{1}{2}(20p_1)}{p_2} = \frac{10p_1}{p_2}$$

$$\text{C) } x_1^B = x_2^B = \frac{20p_2}{p_1 + p_2}$$

$$\text{D) } x_1^A = 10, x_2^A = 5, x_1^B = \frac{40}{3}, x_2^B = \frac{40}{3}$$

$$\text{E) No, total demand for good 1 (apples) is } 10 + \frac{40}{3} = \frac{70}{3} \neq 20.$$

F) Let's find a price  $p_2$  that clears the market for apples. Total demand is:

$$x_1^A + x_1^B = 10 + \frac{20p_2}{1 + p_2}$$

To clear the market we need:

$$10 + \frac{20p_2}{1 + p_2} = 20$$

The solution is  $p_2 = 1$ .

2.

$$\text{A) } x_1^A = \frac{10p_1}{p_1} = 10$$

$$x_2^A = \frac{10p_1}{p_2}$$

$$\text{B) } x_1^B = \frac{\frac{1}{3}(30p_2)}{p_1}$$

$$x_2^B = \frac{\frac{2}{3}(30p_2)}{p_2} = 20$$

C) Let's do the same as in the previous question:

$$10 + \frac{\frac{1}{3}(30p_2)}{1} = 20$$

$$10p_2 = 10$$

$$p_2 = 1$$