1. Sam spends $6/wk on orange juice and apple juice. Orange juice costs $2/cup while apple juice costs $1/cup. Sam views 1 cup of orange juice as a perfect substitute for 3 cups of apple juice. Find Sam's optimal consumption bundle of orange juice and apple juice each week. Suppose the price of apple juice rises to $2/cup, while the price of orange juice remains constant. How much additional income would Sam need to afford his original consumption bundle?

- Budget constraint and endpoints

$$2OJ + AJ = 6 \rightarrow AJ = 6 - 2OJ$$

$$\frac{M}{P_{OJ}} = \frac{6}{2} = 3, \frac{M}{P_{AJ}} = \frac{6}{1} = 6$$

- Optimal consumption bundle is 3 cups of orange juice (and no apple juice), which viewed as good as 9 cups of apple juice (and no orange juice).
- If the price of apple juice doubles from $1 to $2/cup, Sam would not need any additional income as he was not consuming any apple juice.