Since they behave as perfect competitors, the supply curve of the remaining firms is the sum of their marginal cost curves. The demand curve facing the dominant firm is calculated by taking the quantity demanded of the dominant firm’s output at each price as the difference between the market quantity demanded at that price and the sum of the quantities supplied by the remaining firms at that price. Therefore, if the dominant firm sets the price at $p_x'$ (or higher), the remaining firms supply the entire market $x'$ (or less) and the dominant firm sells nothing. If the dominant firm sets the price at $p_x''$ (or lower), then the remaining firms supply nothing and the dominant firm supplies the entire market $x''$ (or more). The demand curve facing the dominant firm follows the red line from $p_x'$ to $a$ and then from $a$ to the $x$ axis. The dominant firm’s marginal revenue curve is calculated in the usual manner.

The dominant firm maximizes its profit at $x^d$ where its marginal cost equals its marginal revenue. It sets the market price at the level $p_x^m$ at which it can sell that output. The quantity sold on the market is $x^m$. The remaining firms sell $x^s = x^m - x^d$. 

Price leadership by a Dominant Firm