

$$MR = P + \left(\frac{\Delta P}{\Delta Q} \right) Q$$

\uparrow from add unit \uparrow negative b/c ΔP is negative

Getting MR from a linear demand curve.

For PC, $\frac{\Delta P}{\Delta Q} = 0 \Rightarrow MR = P$

but for a monopoly $\frac{\Delta P}{\Delta Q} < 0 \Rightarrow P + X$
 $\Rightarrow MR \neq P$

We can get this formula for any demand curve, but we'll focus on linear (inverse) demand curves b/c they're very easy.

Recall, the equation for an inverse demand curve is

$$P = a - bQ$$

\uparrow vertical intercept \uparrow $\frac{\Delta P}{\Delta Q} = \text{slope}$

using this info, we plug into our MR equation

$$\begin{aligned}
 MR &= P + \frac{\Delta P}{\Delta Q} Q \\
 &= (a - bQ) + (-b)Q \\
 &= \boxed{a - 2bQ}
 \end{aligned}$$

So, note that MR will have same vertical intercept as our demand curve, but the slope will be twice as steep. Therefore, we can always figure out our MR curve from our linear demand curve.

