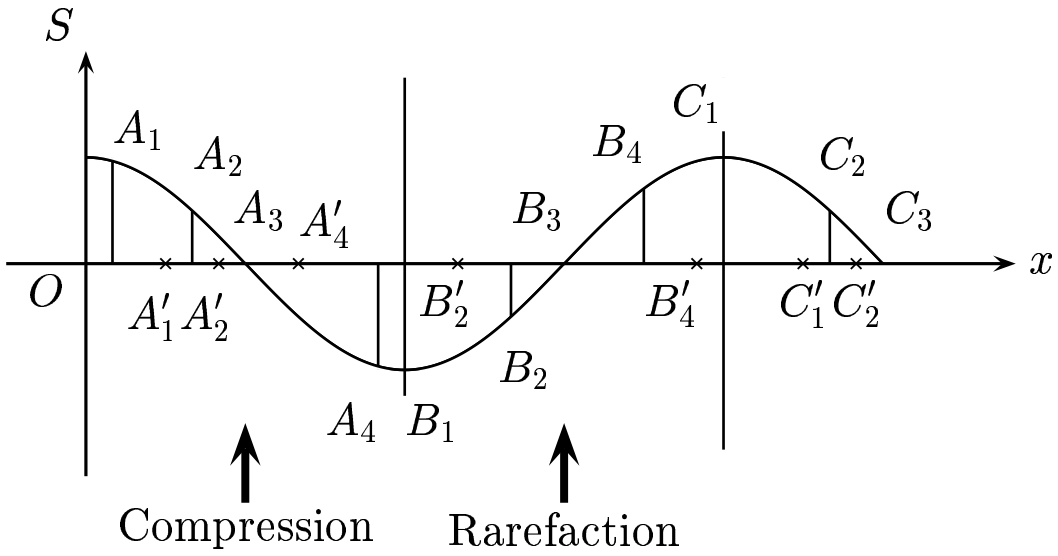
Consider the wave pattern of $s = s_{max} \cos(k x - \omega t)$ at $t = 0$ as shown. Determine ΔP at the most rarefied point, B_3.



Determine ΔP at the most rare field point, B_3. Which one is right?

A) $\Delta P = \Delta P_{max}$.

B) $\Delta P = 0$.

C) $\Delta P = -\Delta P_{max}$.

At $t = 0$, point B_3 is at $k\,x = \dfrac{3\,\pi}{2}$.

$$\Delta\,P = \Delta\,p_{max}\,\sin\left(\,k\,x - \omega\,t\,\right) = \Delta\,p_{max}\,\sin\left(\,\frac{3\,\pi}{2}\,\right) = -\Delta\,P_{max}\,.$$

Answer **C**

17.02-01˙Compression˙and˙Rarefaction˙Pattern 2004-4-27