If $y(x) = \begin{vmatrix} \sin x & \cos x & \sin x + \cos x + 1 \\ 23 & 17 & 13 \\ 1 & 1 & 1 \end{vmatrix}$, $x \in \mathbb{R}$, then $\dfrac{d^2y}{dx^2} + y$ is equal to :

A	6
B	4
C	-10
D	0

Solution:

$y(x) = \begin{vmatrix} \sin x & \cos x & \sin x + \cos x + 1 \\ 23 & 17 & 13 \\ 1 & 1 & 1 \end{vmatrix}$, differentiate w.r.t x

$y'(x) = \begin{vmatrix} \cos x & -\sin x & -\sin x + \cos x \\ 23 & 17 & 13 \\ 1 & 1 & 1 \end{vmatrix}$

$y'(x) = \begin{vmatrix} \cos x & -\sin x & -\sin x + \cos x \\ 23 & 17 & 13 \\ 1 & 1 & 1 \end{vmatrix}$, differentiate w.r.t x

$y''(x) = \begin{vmatrix} -\sin x & -\cos x & -\cos x - \sin x \\ 23 & 17 & 13 \\ 1 & 1 & 1 \end{vmatrix}$

$y(x) + y''(x) = \begin{vmatrix} 0 & 0 & 1 \\ 23 & 17 & 13 \\ 1 & 1 & 1 \end{vmatrix} = 6$

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