17. If the roots of the quadratic equation $x^2 + px + q = 0$ are $\tan 30^0$ and $\tan 15^0$, respectively then the value of $2 + q - p$ is

(2006)

1) 2   2) 3   3) 0   4) 1

Ans.

(2) $x^2 + px + q = 0$

$\tan 30^0 + \tan 15^0 = -p$

$\tan 30^0 \cdot \tan 15^0 = q$

$$\tan 45^0 = \frac{\tan 30^0 + \tan 15^0}{1 - \tan 30^0 \tan 15^0} = \frac{-p}{1-q} = 1$$

$\Rightarrow -p = 1 - q$

$\Rightarrow q - p = 1$ $\therefore 2 + q - p = 3$