

If the roots of the equation $bx^2 + cx + a = 0$ be imaginary, then for all real values of x , the expression $3b^2x^2 + 6bcx + 2c^2$ is :- [AIEEE-2009]

- (1) Greater than $-4ab$ (2) Less than $-4ab$ (3) Greater than $4ab$ (4) Less than $4ab$

Since the roots of $bx^2 + cx + a = 0$ are imaginary

$$\therefore c^2 - 4ab < 0 \Rightarrow c^2 < 4ab$$

for exp. $3b^2x^2 + 6bcx + 2c^2$

$$\text{Min. value} = \frac{-D}{4a} = \frac{(36b^2c^2 - 24b^2c^2)}{12b^2} = \frac{-12b^2c^2}{12b^2} = -c^2$$

$$\therefore -c^2 > -4ab$$

So exp. is greater than $(-4ab)$