ALGEBRA EXAMPLE 4

The product of the roots of $x^2 = |x| + 2$ is

(A) -4 (B) -2 (C) 2 (D) 4

SOLUTION

For $x \geq 0$ $x^2 = x + 2$

$\therefore x^2 - x - 2 = 0$

$\therefore (x-2)(x+1) = 0$

$\therefore x = 2$

NB: $x = -1$ is not valid because $x \geq 0$.

For $x < 0$ $x^2 = -x + 2$

$\therefore x^2 + x - 2 = 0$

$\therefore (x+2)(x-1) = 0$

$\therefore x = -2$

NB: $x = 1$ is not valid because $x < 0$.

So, the roots of the equation are 2 and -2.
The product of the roots is 2 x -2 = -4

The correct answer is A.