Topic: Zero theorem

Question: Solve for the variable.

$$x^2 + 3x - 4 = 0$$

Answer choices:

A $x = -4, \ -1$

B $x = 1, \ 4$

C $x = -4, \ 1$

D $x = -1, \ 4$

Solution: C

We'll factor the left-hand side.

$$x^2 + 3x - 4 = 0$$

$$(x + 4)(x - 1) = 0$$

Zero theorem tells us that, in order for the left-hand side to be equal to 0, one or both of the factors must be 0. Therefore, we can say

$$x + 4 = 0$$

$$x + 4 - 4 = 0 - 4$$

$$x = -4$$

or

$$x - 1 = 0$$

$$x - 1 + 1 = 0 + 1$$

$$x = 1$$

Topic: Zero theorem

Question: Solve for the variable.

$$x^2 - 5x - 6 = 0$$

Answer choices:

A $x = -2, 3$

B $x = -1, 6$

C $x = -6, 1$

D $x = -3, 2$

Solution: B

We'll factor the left-hand side.

$$x^2 - 5x - 6 = 0$$

$$(x - 6)(x + 1) = 0$$

Zero theorem tells us that, in order for the left-hand side to be equal to 0, one or both of the factors must be 0. Therefore, we can say

$$x - 6 = 0$$

$$x - 6 + 6 = 0 + 6$$

$$x = 6$$

or

$$x + 1 = 0$$

$$x + 1 - 1 = 0 - 1$$

$$x = -1$$