

**Topic:** Quadratic formula**Question:** Use the quadratic formula to solve the quadratic.

$$3x^2 + 2x - 1 = 0$$

**Answer choices:**

A  $x = \frac{1}{3}, 1$

B  $x = -1, \frac{1}{3}$

C  $x = -\frac{1}{3}, 1$

D  $x = 2, 3$



**Solution: B**

If we compare the standard form of a quadratic  $ax^2 + bx + c$  to the quadratic we've been given  $3x^2 + 2x - 1$ , we can identify

$$a = 3$$

$$b = 2$$

$$c = -1$$

Plugging these values into the quadratic formula, we get

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(2) \pm \sqrt{(2)^2 - 4(3)(-1)}}{2(3)}$$

$$x = \frac{-2 \pm \sqrt{4 + 12}}{6}$$

$$x = \frac{-2 \pm \sqrt{16}}{6}$$

$$x = \frac{-2 \pm 4}{6}$$

So the solutions to the quadratic equation are

$$x = \frac{-2 - 4}{6} = \frac{-6}{6} = -1$$

$$x = \frac{-2 + 4}{6} = \frac{2}{6} = \frac{1}{3}$$



**Topic:** Quadratic formula

**Question:** Use the quadratic formula to find the solutions of the quadratic equation.

$$2x^2 - 7x - 3 = 0$$

**Answer choices:**

A  $x = \frac{7 - \sqrt{73}}{4}$  and  $x = \frac{7 + \sqrt{73}}{4}$

B  $x = \frac{7 + \sqrt{73}}{2}$  and  $x = \frac{-7 + \sqrt{73}}{2}$

C  $x = \frac{-7 - \sqrt{73}}{4}$  and  $x = \frac{-7 + \sqrt{73}}{4}$

D  $x = \frac{7 - \sqrt{73}}{2}$  and  $x = \frac{7 + \sqrt{73}}{2}$



**Solution: A**

If we compare the standard form of a quadratic  $ax^2 + bx + c$  to the quadratic we've been given  $2x^2 - 7x - 3$ , we can identify

$$a = 2$$

$$b = -7$$

$$c = -3$$

Plugging these values into the quadratic formula, we get

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-7) \pm \sqrt{(-7)^2 - 4(2)(-3)}}{2(2)}$$

$$x = \frac{7 \pm \sqrt{49 + 24}}{4}$$

$$x = \frac{7 \pm \sqrt{73}}{4}$$

So the solutions to the quadratic equation are

$$x = \frac{7 - \sqrt{73}}{4}$$

$$x = \frac{7 + \sqrt{73}}{4}$$



**Topic:** Quadratic formula

**Question:** Find the roots of the equation using the quadratic formula.

$$3x^2 + 10x + 5 = 0$$

**Answer choices:**

A  $x = \frac{5 \pm \sqrt{10}}{3}$

B  $x = \frac{-5 \pm \sqrt{10}}{3}$

C  $x = \frac{-5 \pm \sqrt{10}}{6}$

D  $x = \frac{5 \pm \sqrt{10}}{6}$



**Solution: B**

If we compare the standard form of a quadratic  $ax^2 + bx + c$  to the quadratic we've been given  $3x^2 + 10x + 5$ , we can identify

$$a = 3$$

$$b = 10$$

$$c = 5$$

Plugging these values into the quadratic formula, we get

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-10 \pm \sqrt{10^2 - 4(3)(5)}}{2(3)}$$

$$x = \frac{-10 \pm \sqrt{100 - 60}}{6}$$

$$x = \frac{-10 \pm \sqrt{40}}{6}$$

$$x = \frac{-10 \pm 2\sqrt{10}}{6}$$

So the solutions to the quadratic equation are

$$x = \frac{-5 \pm \sqrt{10}}{3}$$

