Answer Key · Lesson 3.4: Complex Solutions and the Discriminant

School Launch · Algebra II · Unit 3 · Worksheet A · for the parent

Key

1. $x = 3 \pm i$

Solve over the complex numbers: $x^2 - 6x + 10 = 0$.

2. 0; one real solution

Find the discriminant of $x^2 + 2x + 1 = 0$ and tell how many real solutions it has.

3. $x = -2 \pm 5i$

Solve over the complex numbers: $x^2 + 4x + 29 = 0$.

4. -7; no real solutions

1. $D = b^2 - 4ac$
2. $D > 0$: two; $D = 0$: one; $D < 0$: none.

Find the discriminant of $-2x^2 + x - 1 = 0$ and tell how many real solutions it has.

5. $x = \pm 6i$

1. $a = 1,\ b = 0,\ c = 36$; $b^2 - 4ac = 0^2 - 4(1)(36) = -144$
2. $x = \dfrac{0 \pm \sqrt{-144}}{2} = \pm 6i$

Solve over the complex numbers: $x^2 + 36 = 0$.

6. 96; two real solutions

1. $D = b^2 - 4ac$
2. $D > 0$: two; $D = 0$: one; $D < 0$: none.

Find the discriminant of $-4x^2 + 4x + 5 = 0$ and tell how many real solutions it has.

7. $x = -1 \pm 4i$

1. $a = 3,\ b = 6,\ c = 51$; $b^2 - 4ac = 6^2 - 4(3)(51) = -576$
2. $x = \dfrac{-6 \pm \sqrt{-576}}{6} = -1 \pm 4i$

Solve over the complex numbers: $3x^2 + 6x + 51 = 0$.

8. -23; no real solutions

1. $D = b^2 - 4ac$
2. $D > 0$: two; $D = 0$: one; $D < 0$: none.

Find the discriminant of $4x^2 + 5x + 3 = 0$ and tell how many real solutions it has.

9. $x = 4 \pm i$

1. $a = 3,\ b = -24,\ c = 51$; $b^2 - 4ac = (-24)^2 - 4(3)(51) = -36$
2. $x = \dfrac{24 \pm \sqrt{-36}}{6} = 4 \pm i$

Solve over the complex numbers: $3x^2 - 24x + 51 = 0$.

10. 48; two real solutions

1. $D = b^2 - 4ac$
2. $D > 0$: two; $D = 0$: one; $D < 0$: none.

Find the discriminant of $x^2 - 8x + 4 = 0$ and tell how many real solutions it has.