

Practice 5-8

$b^2 - 4ac$

Using the Discriminant

Find the type and number of solutions of each equation using the discriminant.

1. $x^2 + 6x + 10 = 0$

$36 - 4(1)(10)$
 $36 - 40 = -4$

2 \mathbb{C}

2. $x^2 - 4x - 1 = 0$

$16 - 4(1)(-1)$
 $16 + 4 = 20$

2 \mathbb{R}

3. $x^2 + 6x + 9 = 0$

$36 - 4(1)(9)$
 $36 - 36 = 0$

1 \mathbb{R}
 Double Root

4. $x^2 - 8x + 15 = 0$

$64 - 4(1)(15)$
 $64 - 60 = 4$

2 \mathbb{R}

5. $x^2 - 5x + 7 = 0$

$25 - 4(1)(7)$
 $25 - 28 = -3$

2 \mathbb{C}

6. $x^2 - 4x + 5 = 0$

$16 - 4(1)(5)$
 $16 - 20 = -4$

2 \mathbb{C}

7. $3x^2 - 18x + 27 = 0$

$324 - 4(3)(27)$
 $324 - 324 = 0$

1 \mathbb{R}
 Double Root

8. $4x^2 - 8 = 0$

$0^2 - 4(4)(-8)$
 128

2 \mathbb{R}

9. $-5x^2 - 10x = 0$

$100 - 4(-5)(0)$
 100

2 \mathbb{R}

10. $-x^2 = 4x + 6$

$x^2 + 4x + 6 = 0$

$16 - 4(1)(6)$
 $16 - 24 = -8$

2 \mathbb{C}

11. $4x^2 = 9x - 3$

$4x^2 - 9x + 3 = 0$

$81 - 4(4)(3)$
 $81 - 48 = 33$

2 \mathbb{R}

12. $8x^2 + 2 = 8x$

$8x^2 - 8x + 2$

$64 - 4(8)(2)$

$64 - 64 = 0$
 1 \mathbb{R}
 Double Root