

Solve the equation.

1. $x^2 = -25$

$x = \pm 5i$

2. $x^2 - 16 = 0$

$x = \pm 4$

3. $-4x^2 + 20 = -6x^2 - 12$

$2x^2 = -32$
 $x^2 = -16$

$x = \pm 4i$

4. $-2(x - 1)^2 = 36$

$(x - 1)^2 = -18$
 $x - 1 = \pm 3i\sqrt{2}$

$x = 1 \pm 3i\sqrt{2}$

Write the expression as a complex number in standard form.

5. $(2 + i) + (3 + 2i)$

$5 + 3i$

6. $i - (5 + 6i)$

$-5 - 5i$

7. $2i - (2 + 3i) + (1 - 8i)$

$2i - 2 - 3i + 1 - 8i$

$-1 - 9i$

8. $-3i(-5 - 3i)$

$15i + 9i^2$

$-9 + 15i$

9. $(1 + i)(2 + 5i)$

$2 + 5i + 2i + 5i^2$

$-3 + 7i$

10. $(5 + 3i)(4 - 4i)$

$20 - 20i + 12i - 12i^2$

$32 - 8i$

11. $\frac{2}{3+i} \cdot \frac{3-i}{3-i}$

$\frac{6-2i}{(3)^2-(i)^2} = \frac{6-2i}{9+1}$

$\frac{2(3-i)}{10} = \frac{3-i}{5}$

12. $\frac{1-i}{2+2i} \cdot \frac{2-2i}{2-2i} = \frac{2-2i-2i+2i^2}{(2)^2-(2i)^2}$

$\frac{-4i}{4+4} = \frac{-4i}{8}$

$-\frac{1}{2}i$

Find the absolute value of the complex number.

13. $|1 + i|$

$\sqrt{(1)^2 + (1)^2}$

$\sqrt{2}$

14. $|5 + i|$

$\sqrt{(5)^2 + (1)^2}$

$\sqrt{26}$

15. $|1 - i\sqrt{3}|$

$\sqrt{(1)^2 + (\sqrt{3})^2}$

2

16. $|\sqrt{5} + 2i\sqrt{2}|$

$\sqrt{(\sqrt{5})^2 + (2\sqrt{2})^2}$

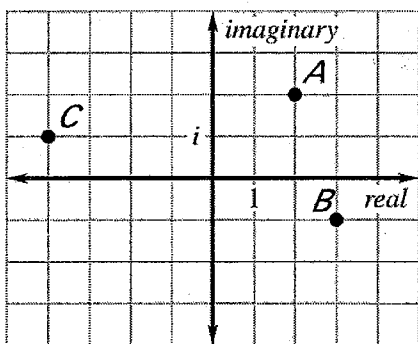
$\sqrt{13}$

17. Identify the complex numbers plotted below.

A. $2 + 2i$

B. $3 - i$

C. $-4 + i$

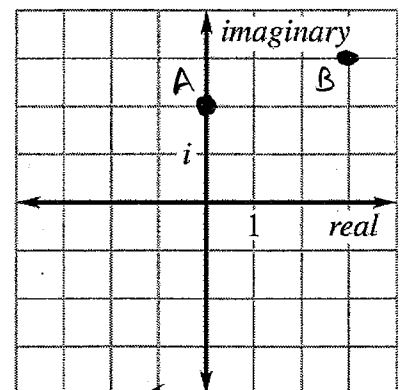


18. Plot the numbers in the complex plane below.

A. $2i$

B. $3 + 3i$

C. $-1 - 4i$



Solve the equation by finding square roots.

19. $x^2 + 2x + 1 = 9$

$(x+1)^2 = 9$

$x+1 = \pm 3$

$x = 2, -4$

20. $x^2 - 14x + 49 = 7$

$(x-7)^2 = 7$

$x = 7 \pm \sqrt{7}$

21. $x^2 - x + \frac{1}{4} = 1$

$(x - \frac{1}{2})^2 = 1$

$x - \frac{1}{2} = \pm 1$

$x = \frac{3}{2}, -\frac{1}{2}$

Find the value of c that makes the expression a perfect square trinomial. Then write the expression as a square of a binomial.

22. $x^2 + 4x + c$

$c = 4$ $(x+2)^2$

23. $x^2 + 18x + c$

$c = 81$ $(x+9)^2$

24. $x^2 - 5x + c$

$c = \frac{25}{4}$ $(x - \frac{5}{2})^2$

Solve the equation by completing the square.

25. $x^2 - 2x - 2 = 0$

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

$(\frac{-2}{2})^2 = (-1)^2$

$(x-1)^2 = 3$

$x-1 = \pm \sqrt{3}$

$x = 1 \pm \sqrt{3}$

26. $x^2 + 2x + 5 = 0$

$x^2 + 2x + 1 = -5 + 1$

$(\frac{2}{2})^2 = (1)^2$

$(x+1)^2 = -4$

$x+1 = \pm 2i$

$x = -1 \pm 2i$

27. $x^2 + 8x - 2 = 0$

$x^2 + 8x + 16 = 2 + 16$

$(\frac{8}{2})^2 = (4)^2$

$(x+4)^2 = 18$

$x+4 = \pm 3\sqrt{2}$

$x = -4 \pm 3\sqrt{2}$

28. $x^2 - x + 1 = 0$

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

$(\frac{-1}{2})^2 = \frac{1}{4}$

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

$x - \frac{1}{2} = \pm \frac{\sqrt{3}}{2}$

$x = \frac{1}{2} \pm \frac{\sqrt{3}}{2}$

29. $3x^2 + 36x = -42$

$x^2 + 12x + 36 = -14 + 36$

$(\frac{12}{2})^2 = (6)^2$

$(x+6)^2 = 22$

$x+6 = \pm \sqrt{22}$

$x = -6 \pm \sqrt{22}$

30. $6x^2 - 12x - 18 = 0$

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

$(\frac{-2}{2})^2 = (-1)^2$

$(x-1)^2 = 4$

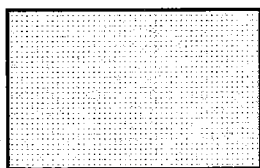
$x-1 = \pm 2$

$x = 1 \pm 2$

$x = 3, -1$

Find the value of x.

31. Area of rectangle = 40



$x(x+3) = 40$

$x^2 + 3x = 40$

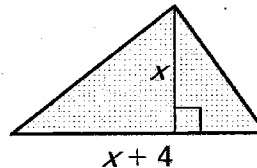
$x^2 + 3x - 40 = 0$

$(x+8)(x-5) = 0$

$x = -8, x = 5$

$x = 5$

32. Area of triangle = 16



$\frac{1}{2}(x)(x+4) = 16$

$\frac{1}{2}x^2 + 2x = 16$

$x^2 + 4x + 4 = 32 + 4$

$(\frac{4}{2})^2 = (2)^2$

$(x+2)^2 = 36$

$x+2 = \pm 6$

$x = -2 \pm 6$

$x = 4$