

Solve the equation.

1)  $x^2 - 25 = 0$

$x^2 = 25$

$x = \pm 5$

2)  $x^2 + 16 = 0$

$x^2 = -16$

$x = \pm \sqrt{-16}$

$x = \pm 4i$

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

$\frac{2x^2}{2} = \frac{-32}{2}$

$x^2 = -16$

$x = \pm 4i$

4)  $3x^2 + x + 8 = 2x^2 + x + 7$   
 $-2x^2 - x - 8 - 2x^2 - x - 8$

$x^2 = -1$

$x = \pm i$

5)  $4(x+5)^2 = 64$

$(x+5)^2 = 16$

$x+5 = \pm 4$

$x = -5 \pm 4$

$x = -1, -9$

6)  $-2(x-1)^2 + 7 = 43$

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

$(x-1)^2 = -18$

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

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

Write the expression as a complex number in standard form.

7)  $(2+i) + (3+2i)$

$5+3i$

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

$i - 5 - 6i$

$-5-5i$

9)  $2i - (2+3i) + (1-8i)$

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

$-1-9i$

10)  $-3i(-5-3i)$

$15i + 9i^2$

$15i + 9(-1)$

$-9+15i$

11)  $(1+i)(2+5i)$

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

$2+7i-5$

$-3+7i$

12)  $(5+3i)(4-4i)$

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

$20 - 8i + 12$

$32-8i$

13)  $\frac{2}{3+i} \cdot \frac{3-i}{3-i}$

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

$\frac{6-2i}{10} = \frac{6}{10} - \frac{2}{10}i$

$\frac{3}{5} - \frac{1}{5}i$

14)  $\frac{1-i}{2+2i} \cdot \frac{2-2i}{2-2i}$

$\frac{2-2i-2i+2i^2}{4-4i+4i-4i^2}$

$\frac{2-4i-2}{4+4} = \frac{-4i}{8} = -\frac{1}{2}i$

15)  $\frac{i}{i-4} \cdot \frac{5}{2+i} = \frac{5i}{2i+i^2-8-4i}$

$= \frac{5i}{-8-1-2i} = \frac{5i}{-9-2i} \cdot \frac{-9+2i}{-9+2i}$

$\frac{-45i+10i^2}{81-18i+18i-4i^2}$

$\frac{-10-45i}{81+4} = \frac{-10}{85} - \frac{45}{85}i$   
 $= -\frac{2}{17} - \frac{9}{17}i$

Solve the equation by finding square roots.

16)  $x^2 + 2x + 1 = 9$

$$(x+1)^2 = 9$$

$$x+1 = \pm 3$$

$$x = -1 \pm 3$$

$$x = 2, -4$$

17)  $x^2 - 14x + 49 = 7$

$$(x-7)^2 = 7$$

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

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

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

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

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

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

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

19)  $x^2 + 4x + c$

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

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

20)  $x^2 + 18x + c$

$$(\frac{18}{2})^2 = (9)^2 = 81$$

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

21)  $x^2 - 5x + c$

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

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

Solve the equation by completing the square.

22)  $x^2 - 2x - 2 = 0$

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

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

$$(x-1)^2 = 3$$

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

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

23)  $x^2 + 2x + 5 = 0$

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

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

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

$$x+1 = \pm 2i$$

$$x = -1 \pm 2i$$

24)  $x^2 + 8x - 2 = 0$

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

$$(\frac{8}{2})^2 = (4)^2 = 16$$

$$(x+4)^2 = 18$$

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

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

25)  $x^2 - x + 1 = 0$

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

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

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

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

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

26)  $\frac{3x^2}{3} + \frac{36x}{3} = \frac{-42}{3}$

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

$$(\frac{12}{2})^2 = (6)^2 = 36$$

$$(x+6)^2 = 22$$

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

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

27)  $\frac{6x^2}{6} - \frac{12x}{6} - \frac{18}{6} = \frac{0}{6}$

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

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

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

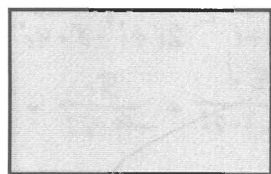
$$(x-1)^2 = 4$$

$$x-1 = \pm 2$$

$$x = 1 \pm 2 = 3, -1$$

Find the value of x.

28) Area of rectangle = 40



$$x+3$$

$$x(x+3) = 40$$

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

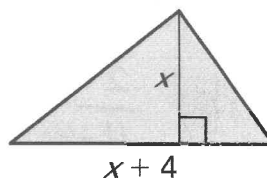
$$x^2 + 3x - 40 = 0$$

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

$$x = -8, 5$$

$$x = 5$$

29) Area of triangle = 16



$$x+4$$

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

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

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

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

$$\sqrt{(x+2)^2} = \sqrt{36}$$

$$x+2 = \pm 6$$

$$x = -2 \pm 6$$

$$x = -8, 4$$

$$x = 4$$