

**Solve using any method.**

1.  $6(x^2 + 1) + 13x = 0$

$$6x^2 + 13x + 6 = 0$$

$$(3x + 2)(2x + 3) = 0$$

$$x = -\frac{2}{3} \quad x = -\frac{3}{2}$$

2.  $5x^2 + 120 = 0$

$$5x^2 = -120$$

$$x^2 = -24$$

$$x = \pm 2i\sqrt{6}$$

3.  $x^2 - 6x + 33 = 0$

$$x^2 - 6x + 9 = -33 + 9$$

$$(x - 3)^2 = -24$$

$$x - 3 = \pm 2i\sqrt{6}$$

$$x = 3 \pm 2i\sqrt{6}$$

4.  $5x^2 + 31x = -6$

$$5x^2 + 31x + 6 = 0$$

$$(5x + 1)(x + 6) = 0$$

$$x = -\frac{1}{5} \quad x = -6$$

5.  $12 = x^2 + 7x$

$$0 = x^2 + 7x - 12$$

$$x = \frac{-7 \pm \sqrt{97}}{2}$$

6.  $2(x - 1)^2 + 72 = 0$

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

$$x - 1 = \pm 6i$$

$$x = 1 \pm 6i$$

<p>7. <math>x^2 = 100</math></p> $x = \pm 10$	<p>8. <math>3x^3 + 6 = 2x^2 + 9x</math></p> $\underbrace{3x^3 - 2x^2 - 9x + 6 = 0}$ $x^2(3x-2) - 3(3x-2) = 0$ $(3x-2)(x^2-3) = 0$ $x = \frac{2}{3} \quad x = \pm \sqrt{3}$
<p>9. <math>x^2 + 4x = 9</math></p> $x^2 + 4x + 4 = 9 + 4$ $(x+2)^2 = 13$ $x = -2 \pm \sqrt{13}$	<p>10. <math>2y^2 + 5y + 2 = 0</math></p> $(2y+1)(y+2) = 0$ $y = -\frac{1}{2} \quad y = -2$
<p>11. <math>x^2 + x = 132</math></p> $x^2 + x - 132 = 0$ $(x+12)(x-11) = 0$ $x = -12 \quad x = 11$	<p>12. <math>y^2 - 9(y+3) = 0</math></p> $y^2 - 9y - 27 = 0$ $y = \frac{9 \pm \sqrt{189}}{2}$ $y = \frac{9 \pm 3\sqrt{21}}{2}$

ANSWERS: 1.  $-\frac{3}{2}, -\frac{2}{3}$     2.  $\pm 2i\sqrt{6}$     3.  $3 \pm 2i\sqrt{6}$     4.  $-\frac{1}{5}, -6$     5.  $\frac{-7 \pm \sqrt{97}}{2}$

6.  $1 \pm 6i$     7.  $\pm 10$     8.  $\frac{2}{3}, \pm \sqrt{3}$     9.  $-2 \pm \sqrt{13}$     10.  $-\frac{1}{2}, -2$     11.  $-12, 11$     12.  $\frac{9 \pm 3\sqrt{21}}{2}$