Algebra 1 - Quadratics Unit

Name_____

Solving Quadratic Equations

Date_____ Period____

Solve each equation.

1) $2x^2 - 18 = 0$

{3, –3} $2x^2 = 18$, $x^2 = 9$, $x = \pm 3$

2) $4n^2 + n - 8 = 0$

{1.295, –1.545} $\frac{-1 \pm \sqrt{129}}{8}$

3) $4n^2 + 8n - 96 = 0$

{4, –6} $a = 4$ $b = 8$ $c = -96$

$x = \frac{-8 \pm \sqrt{64 - 4(4)(-96)}}{8}$

$x = \frac{-8 \pm \sqrt{1600}}{8} = -1 \pm \frac{40}{8} = -1 \pm 5$

$x = -6, 4$

4) $11r^2 - 14 = 0$

{1.128, –1.128} $11r^2 = 14$, $r^2 = \frac{14}{11}$, $r = \pm\sqrt{\frac{14}{11}}$

5) $3b^2 - 75 = 0$

{5, –5} $\frac{3b^2}{3} = \frac{75}{3}$, $b^2 = 25$, $b = \pm 5$

6) $2x^2 + 3x - 119 = 0$

{7, –8.5} $\frac{-3 \pm \sqrt{961}}{4} = \frac{-3 \pm 31}{4}$

$\frac{-3+31}{4} = 7$ $\frac{-3-31}{4} = -8.5$

7) $3n^2 + 2n + 9 = 0$

No solution. $b^2 - 4ac = 4 - 4(3)(9) = -104 < 0$

No solution

8) $6p^2 - 12p - 14 = 8$

{3.16, –1.16} $-8 \quad -8$

$6p^2 - 12p - 22$

$\frac{12 \pm \sqrt{672}}{12}$

9) $6x^2 - 5x - 104 = 12$

{4.833, –4} $6x^2 - 5x - 116 = 0$

$x = \frac{5 \pm \sqrt{25 - 4(6)(-116)}}{2(6)}$

$x = \frac{5 \pm 53}{12} = -4, \frac{29}{6}$

10) $6k^2 - 15 = -9$

{1, –1} $6k^2 = 6$, $k^2 = 1$, $k = \pm 1$

11) $4b^2 + 9b - 6 = 3$

$4b^2 + 9b - 9 = 0$

$\{0.75, -3\}$

$X = \frac{-9 \pm \sqrt{81 - 4(4)(-9)}}{2(4)}$

$X = \frac{-9 \pm \sqrt{225}}{8} = \frac{-9 \pm 15}{8}$

$X = -3, \frac{3}{4}$

12) $b^2 - 2b + 8 = -4$

No solution.

13) $2n^2 + 3n - 30 = -7$

$2n^2 + 3n - 23 = 0$

$\{2.723, -4.223\}$ $a = 2$ $b = 3$ $c = -23$

$X = \frac{-3 \pm \sqrt{9 - 4(2)(-23)}}{4} = \frac{-3 \pm \sqrt{193}}{4}$

14) $2a^2 - 12a - 3 = -7$

$\{5.646, 0.354\}$

15) $3p^2 - 3 = 0$

$\{1, -1\}$

$\frac{3p^2}{3} = \frac{3}{3}$

$p^2 = 1$

$p = \pm 1$

16) $2m^2 + 2m = 6$

$\{1.303, -2.303\}$

17) $7m^2 + 10m = 13$

$7m^2 + 10m - 13 = 0$

$\{0.824, -2.253\}$ $a = 7$ $b = 10$ $c = -13$

$X = \frac{-10 \pm \sqrt{100 - 4(7)(-13)}}{2(7)} = \frac{-10 \pm \sqrt{464}}{14}$

18) $5p^2 = 2$

$\{0.632, -0.632\}$

19) $x^2 + 12x = -11$

$x^2 + 12x + 11 = 0$

$\{-1, -11\}$

$(x + 11)(x + 1) = 0$

$X = -1, -11$