

# Quadratics Test Review

1.  $x^2 + 11x + 30 = 0$

$$\begin{array}{r} 30 \\ 6 \times 5 \\ \hline 11 \end{array}$$

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

$$x+6=0$$

$$x+5=0$$

$$x = -6$$

$$x = -5$$

2.  $p^2 + 10p + 16 = 0$

$$\begin{array}{r} 16 \\ 8 \times 2 \\ \hline 10 \end{array}$$

$$(p+8)(p+2) = 0$$

$$p+8=0$$

$$p+2=0$$

$$p = -8$$

$$p = -2$$

3.  $3m^2 - 14m - 5 = 0$

$$\begin{array}{r} -15 \\ -15 \times 1 \\ \hline -14 \end{array}$$

	$m-5$
$3m$	$3m^2 - 15m$
$1$	$1m - 5$

$$(3m+1)(m-5) = 0$$

$$3m+1=0$$

$$m-5=0$$

$$3m = -1$$

$$m = 5$$

$$m = -1/3$$

4.  $2r^2 + 5r - 12 = 0$

$$\begin{array}{r} -24 \\ 8 \times -3 \\ \hline 5 \end{array}$$

	$r+4$
$2r$	$2r^2 + 8r$
$-3$	$-3r - 12$

$$(2r-3)(r+4) = 0$$

$$2r-3=0$$

$$r+4=0$$

$$2r = 3$$

$$r = -4$$

$$r = \frac{3}{2}$$

5.  $\sqrt{r^2} = \pm 16$

$$r = \pm 4$$

6.  $\sqrt{(r-8)^2} = \pm 8$

$$r-8 = \pm 8$$

$$r = 8 \pm 8$$

$$r = 8+8 = 16 \quad + \quad r = 8-8 = 0$$

7.  $k^2 - 3 = -8$

$$\sqrt{k^2} = \pm \sqrt{-5}$$

$$k = \pm i\sqrt{5}$$

8.  $\frac{9b^2}{9} = \frac{441}{9}$

$$\sqrt{b^2} = \pm \sqrt{49}$$

$$b = \pm 7$$

9.  $n^2 - 8n + 15 = 0$

$$n^2 - 8n + 16 = -15 + 16$$

$$(-8/2)^2 = (-4)^2$$

$$\sqrt{(n-4)^2} = \pm 1$$

$$n-4 = \pm 1$$

$$n = 4 \pm 1$$

$$n = 4+1 = 5 \quad + \quad n = 4-1 = 3$$

10.  $n^2 + 6n - 27 = 0$

$$n^2 + 6n + 9 = 27 + 9$$

$$(6/2)^2 = (3)^2$$

$$\sqrt{(n+3)^2} = \pm 6$$

$$n+3 = \pm 6$$

$$n = -3 \pm 6$$

$$n = -3+6 = 3 \quad + \quad n = -3-6 = -9$$



$$10. n^2 + 16n + 52 = 0$$

$$n^2 + 16n + 64 = -52 + 64$$

$$(16/2)^2 = (8)^2 = 64$$

$$\sqrt{(n+8)^2} = \sqrt{12}$$

$$n+8 = \pm 2\sqrt{3}$$

$$n = -8 \pm 2\sqrt{3}$$

$$12. m^2 + 8m + 12 = 0$$

$$m^2 + 8m + 16 = -12 + 16$$

$$(8/2)^2 = (4)^2 = 16$$

$$\sqrt{(m+4)^2} = \sqrt{4}$$

$$m+4 = \pm 2$$

$$m = -4 \pm 2$$

$$m = -4+2 = -2 + m = -4-2 = -6$$

$$13. 3x^2 - x + 2 = 0$$

$$a=3 \quad b=-1 \quad c=2$$

$$\frac{1 \pm \sqrt{(-1)^2 - 4(3)(2)}}{2(3)}$$

$$\frac{1 \pm \sqrt{-23}}{6} = \frac{1 \pm i\sqrt{23}}{6}$$

$$14. 2n^2 - 3n + 1 = 0$$

$$a=2 \quad b=-3 \quad c=1$$

$$\frac{3 \pm \sqrt{(-3)^2 - 4(2)(1)}}{2(2)}$$

$$\frac{3 \pm \sqrt{1}}{4} = \frac{3 \pm 1}{4}$$

$$\frac{3+1}{4} = \frac{4}{4} = 1 + \frac{3-1}{4} = \frac{2}{4} = \frac{1}{2}$$

$$15. 4n^2 - 9n + 3 = 0$$

$$a=4 \quad b=-9 \quad c=3$$

$$\frac{9 \pm \sqrt{(-9)^2 - 4(4)(3)}}{2(4)}$$

$$\frac{9 \pm \sqrt{33}}{8}$$

$$16. 3p^2 - 6p + 5 = 0$$

$$a=3 \quad b=-6 \quad c=5$$

$$\frac{6 \pm \sqrt{(-6)^2 - 4(3)(5)}}{2(3)}$$

$$\frac{6 \pm \sqrt{-24}}{6} = \frac{6 \pm 2i\sqrt{6}}{6}$$

$$\frac{3 \pm i\sqrt{6}}{3}$$