

Trig 4.2

Solve quadratic equations (factor, CTS, QF)*

Use the discriminant to describe roots

*Algebra 2 Ch. 6

completing the square } Solve any
quadratic formula }

discriminant
(nature of the roots)

$$b^2 - 4ac$$

conjugates

Quadratic formula song

$$33) \quad | \quad x^2 - 2x\sqrt{6} - 2 = 0$$

$$x^2 - 2\sqrt{6}x - 2 = 0$$

$$a=1 \quad b=-2\sqrt{6} \quad c=-2$$

$$x = \frac{2\sqrt{6} \pm \sqrt{(-2\sqrt{6}-2\sqrt{6})-4 \cdot 1 \cdot -2}}{2}$$

$$x = \frac{2\sqrt{6} \pm \sqrt{24+8}}{2} = \frac{2\sqrt{6} \pm \sqrt{32}}{2} = \frac{2\sqrt{6}}{2} \pm \frac{4\sqrt{2}}{2}$$

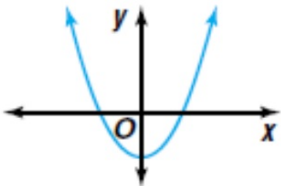
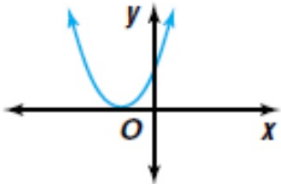
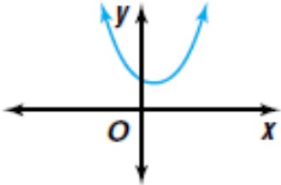
$$= \boxed{\sqrt{6} \pm 2\sqrt{2}}$$

**Quadratic
Formula**

The roots of a quadratic equation of the form $ax^2 + bx + c = 0$ with $a \neq 0$ are given by the following formula.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Discriminant
 b^2-4ac

Discriminant	Nature of Roots/Zeros	Graph
$b^2 - 4ac > 0$	two distinct real roots/zeros	
$b^2 - 4ac = 0$	exactly one real root/zero (The one real root is actually a double root.)	
$b^2 - 4ac < 0$	no real roots/zero (two distinct imaginary roots/zeros)	

Solve (whiteboards)

31. $4r^2 - r = 5$

32. $p^2 + 2p + 8 = 0$

33. $x^2 - 2x\sqrt{6} - 2 = 0$

Find the discriminant of each equation and describe the nature of the roots of the equation. Then solve the equation by using the Quadratic Formula.

7. $m^2 + 12m + 36 = 0$

8. $t^2 - 6t + 13 = 0$

Find the discriminant of each equation and describe the nature of the roots of the equation. Then solve the equation by using the Quadratic Formula.

20. $6m^2 + 7m - 3 = 0$

21. $s^2 - 5s + 9 = 0$

22. $36d^2 - 84d + 49 = 0$

23. $4x^2 - 2x + 9 = 0$

