A1 S2 w8d3 9-5 D & E

9-4 Solving Quadratic Equations by Factoring

Solve each equation by factoring. Show all your work clearly. Circle your answers.

1. $(2a+1)(a-3)=0$

2. $b^2-6b+5=0$

3. $4c^2+33c+35=0$

4. $3d^2-16d=12$

5. $6e^2-5e=6$

Completing the Square Notes

Complete the square for each trinomial:

$$x^2 - 11 = 14x$$

$$10x - 24 = -x^2$$

Alg 1 Week 8 Block   Completing the Square

T he process of turning a polynomial into a *perfect square* is called **completing the square**. Once we complete the square, we have only one place with the variable, instead of two. This is helpful because we can undo the square by taking the square root, or "unsquaring". Completing the square can be used to help us solve *all* quadratic equations, even ones that don't factor!

Skill 17: Solving quadratic equations by completing the square

Step 1: Put the equation into standard form.

Step 2: Move the c term to the right side of the equation, and leave a large blank space in its place on the left side.

Step 3: Identify the b term, and find half of it. Square that number. Now add this value to both sides of the equation. (Fill in the large blank space on the left side with this number.)

Step 4: Simplify the right side of the equation, and factor the left side. (Use an X and a box if needed.)

Step 5: Take the square root of both sides. Remember to add "±" on the right side.

Step 6: Simplify the square roots, if possible.

Step 7: Write the two equations implied by the "±", and solve each for the variable.

Step 8: Write the final answer in set notation: $x = \{\ \ ,\ \ \}$

Use the process described above to solve each quadratic equation. Be sure to check your answers with the scrambled answers at the bottom of the next page.

1. $x^2 + 4x - 3 = 0$ 2. $a^2 + 10a = 10$

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3. $d^2 + 2d - 7 = 1$

4. $e^2 + 8e - 2 = -10$

5. $f^2 + 20f + 50 = 200$

6. $g^2 + 18g - 40 = 4$

7. $2h^2 + 20h + 50 = 200$

8. $3k^2 - 36k - 24 = 300$

Scrambled answers for 1-8: $\{-15,5\}, \{-9\pm5\sqrt{5}\}, \{-10\pm5\sqrt{10}\}, \{-6,18\}, \{-5\pm\sqrt{35}\}, \{-4\pm2\sqrt{2}\}, \{-4,2\}, \{-2\pm\sqrt{7}\}$

Algebra 1   *OBJ: Introduce solving quadratic equations by completing the square*   *9-5.E*