

Monday 11-5-18
Methods for solving
quadratic equations

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MATH 1314 + MATH 0270
College Algebra with Foundations
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sec. 1.4

Method number 1
by factoring.

ex1 $x^2 + 5x + 6 = 0$

1) Set the equation
equal to zero.

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

2) Factor the
polynomial

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

$$\begin{matrix} +3 & +2 \\ 2 & 3 \end{matrix}$$

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

3) Set each
factor to
zero and
solve.

$$x+3=0 \quad x+2=0$$

$$x = -3 \quad \text{or} \quad x = -2$$

ex2 $4x^2 = 25$

$$4x^2 - 25 = 0$$

* difference of squares

$$(2x+5)(2x-5) = 0$$

$$2x+5=0 \quad 2x-5=0$$

$$2x = -5$$

$$2x = 5$$

$$x = -5/2 \quad \text{or} \quad x = 5/2$$

ex3 $6x^2 = 21x$

$$6x^2 - 21x = 0$$

* factor out

$$3x(2x-7) = 0$$

$$3x = 0$$

$$2x-7=0$$

$$x = 0/3$$

$$2x = 7$$

$$x = 0 \quad \text{or} \quad x = 7/2$$

ex4 $4x^2 + 12x + 9 = 0$

$$4x^2 + 12x + 9 = 0$$

* factor of the first term and last term

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

$$2x+3=0 \quad 2x+3=0$$

$$2x = -3$$

$$2x = -3$$

$$x = -3/2 \quad \text{or} \quad x = -3/2$$

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we assign problems

Section 1.4

① $18x^2 + 2x = 0$

$2x(9x+1) = 0$

$2x = 0$ $9x+1 = 0$

$x = 0/2$ or $9x = -1$

$x = 0$ or $x = -1/9$

② $64x^2 - 1 = 0$

$(8x+1)(8x-1) = 0$

$8x+1 = 0$ $8x-1 = 0$

$8x = -1$ $8x = 1$

$x = -1/8$ or $x = 1/8$

Boardwork

① $x^2 - 5x + 4 = 0$

$x^2 - 5x + 4 = 0$

$\oplus -4$ $\oplus -1$

$(x-4)(x-1) = 0$

$x-4 = 0$ $x-1 = 0$

$x = 4$ or $x = 1$

② $2x^2 - 11x - 21 = 0$

$(2x+3)(x-7) = 0$

$2x+3 = 0$ $x-7 = 0$

$2x = -3$ $x = 7$

$x = -3/2$ or $x = 7$

③ $10x^2 - 35x = 0$

$5x(2x-7) = 0$

$5x = 0$ $2x-7 = 0$

$x = 0/5$ $2x = 7$

$x = 0$ or $x = 7/2$