Today's Plan:

Learning Target (standard): I will solve equations that are quadratic in form.

Students will: Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

Teacher will: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

Assessment: Board work, homework check and homework assignment

Differentiation: Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

Solve by factoring:

$$2x^2 - 3x = 0$$

$x(2x-3)=0$

$x = 0, \frac{3}{2}$

Solve by factoring:

$2x^2+9x=5$

$2x^2+9x-5=0$

10
10 −1 = 9

$2x^2+10x-x-5=0$

$2x(x+5)-1(x+5)=0$

$(x+5)(2x-1)=0$

$x=-5,\frac{1}{2}$

Solve using the square root property:

$3(x-2)^2-24=0$

$\frac{3(x-2)^2}{3}=\frac{24}{3}$

$\sqrt{(x-2)^2}=\pm\sqrt{8}$

8
4 2
$2\sqrt{2}$

$x-2=2\sqrt{2},-2\sqrt{2}$

$x=2+2\sqrt{2},\ 2-2\sqrt{2}$

Solve by completing the square:

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

$\frac{4}{2}=2^2=4$

$x^2+4x+4=-12+4$

$(x+2)^2=\pm\sqrt{-8}$

$x+2=2\sqrt{2}i,\ -2\sqrt{2}i$

$x=-2+2\sqrt{2}i,\ -2-2\sqrt{2}i$

Solve by completing the square:

$\frac{2x^2}{2}-\frac{2x}{2}=\frac{1}{2}$

$\left(\frac{1}{2}\right)^2=\frac{1}{4}$

$x^2-x+\frac{1}{4}=\frac{1}{2}+\frac{1}{4}$

$\left(x-\frac{1}{2}\right)^2=\pm\sqrt{\frac{3}{4}}$

$x-\frac{1}{2}=\frac{\sqrt{3}}{2},\ -\frac{\sqrt{3}}{2}$

$x=\frac{1}{2}+\frac{\sqrt{3}}{2},\ \frac{1}{2}-\frac{\sqrt{3}}{2}$

$x=\frac{1+\sqrt{3}}{2},\ \frac{1-\sqrt{3}}{2}$

Solve using the quadratic formula:

$x^2 + 6x + 10 = 0$

$a = 1$
$b = 6$
$c = 10$

$b^2 - 4ac$

$(6)^2 - 4(1)(10)$

$36 - 40$

$-4 < 0$ 2 complex solutions

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

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

$\div 2$

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

$x = -3 + i, -3 - i$

Equations that are Quadratic in Form:

- Quadratic equation $ax^2 + bx + c = 0$
- When an equation is written in standard form, the exponent on one variable term is $^1/_2$ the exponent on the other variable term

$z^1 + 7z^{\frac{1}{2}} - 18 = 0$ * factoring

- Check the solution. When changing each side of an equation by performing an operation other than addition, subtraction, multiplication, or division, the resulting equation may have a solution that is not a solution of the original equation
- The degree of the polynomial determines the number of solutions only if all of the exponents are whole numbers

→ highest exponents

Solve by factoring:

$x^4 - 4x^2 + 3 = 0$

4 answers

3: $-1 + -3 = -4$

$x^4 - x^2 - 3x^2 + 3 = 0$

$x^2(x^2-1) - 3(x^2-1) = 0$

$(x^2-1)(x^2-3) = 0$

$(x+1)(x-1)(x^2-3) = 0$

$x+1=0 \quad x-1=0 \quad x^2-3=0$

$x=-1 \quad x=1 \quad \sqrt{x^2} = \pm\sqrt{3}$

$x = \sqrt{3}, -\sqrt{3}$

$x = -1, 1, \sqrt{3}, -\sqrt{3}$

Solve by factoring:

$2x^{\frac{2}{3}} + 3x^{\frac{1}{3}} - 2 = 0$

4: $4 - 1 = 3$

$2x^{\frac{2}{3}} + 4x^{\frac{1}{3}} - x^{\frac{1}{3}} - 2 = 0$

$2x^{\frac{1}{3}}(x^{\frac{1}{3}}+2) - 1(x^{\frac{1}{3}}+2) = 0$

$(x^{\frac{1}{3}}+2)(2x^{\frac{1}{3}}-1) = 0$

$x^{\frac{1}{3}} + 2 = 0 \qquad 2x^{\frac{1}{3}} - 1 = 0$

$(x^{\frac{1}{3}})^3 = (-2)^3 \qquad 2x^{\frac{1}{3}} = 1$

$x^{\frac{m}{n}} = \sqrt[n]{x^m}$

$x = -8 \qquad (x^{\frac{1}{3}})^3 = (\frac{1}{2})^3$

$x = \frac{1}{8}$

$x = -8, \frac{1}{8}$

Solve by factoring:

$$p + 2p^{\frac{1}{2}} - 24 = 0$$

24: $6 \cdot -4 = 2$

$p + 6p^{\frac{1}{2}} - 4p^{\frac{1}{2}} - 24 = 0$

$p^{\frac{1}{2}}(p^{\frac{1}{2}} + 6) - 4(p^{\frac{1}{2}} + 6) = 0$

$(p^{\frac{1}{2}} + 6)(p^{\frac{1}{2}} - 4) = 0$

$p^{\frac{1}{2}} + 6 = 0$ $\quad$ $p^{\frac{1}{2}} - 4 = 0$

$(p^{\frac{1}{2}})^2 = (-6)^2$ $\quad$ $(p^{\frac{1}{2}})^2 = (4)^2$

$p = 36$ $\quad$ $p = 16$

$p = 36, 16$

$p = 16$

Assignment:

p.341 #2-24 even

* skip #18 *