Solving Quadratic Equations using Completing the Square.

$(x^2+10x)+4=0$ ① Complete the square.

$(x^2+10x+25)-25+4=0$

$(x+5)^2-21=0$ ② Isolate the bracket

$+21 \quad +21$

$\sqrt{(x+5)^2}=\sqrt{21}$

$x+5=\pm\sqrt{21}$ (means $+\sqrt{21}$ or $-\sqrt{21}$)

$-5 \quad -5$

$x=-5\pm\sqrt{21}$

$=-5+\sqrt{21}$

or $=-5-\sqrt{21}$

Solve by Completing the Square

(1) $x^2 - 8x + 13 = 0$ $x = 4 \pm \sqrt{3}$

(2) $3x^2 + 6x + 1 = 0$ $x = -1 \pm \sqrt{3/2}$

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

$x = 1 \pm \sqrt{5/2}$

What about...

$\sqrt{(x-3)^2} = \sqrt{4}$

$x - 3 = \pm 2$

$x - 3 = 2$ or $x - 3 = -2$

$+3 \quad +3 \qquad +3 \quad +3$

$x = 5$ or $x = 1$

$2x^2 - 8 = 0$

$+8 \quad +8$

$\frac{2x^2}{2} = \frac{8}{2}$

$x^2 = 4$

$x = \pm 2$

(1) $x^2 - 64 = 0$

(2) $\frac{1}{3}t^2 - 1 = 11$

(3) $-y^2 + 5 = -6$

(4) $(x+2)^2 = 9$

(5) $(d+\frac{1}{2})^2 = 1$

(6) $(x+4)^2 = 18$

New Purple Sheet

Assignment:

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