5-5 COMPLETING THE SQUARE

Trinomial Squares $A^2 + 2AB + B^2 = (A + B)^2$
$A^2 - 2AB + B^2 = (A - B)^2$

CTS

ex. 1 Complete the trinomial squares and factor.

$\left(\frac{-16}{2}\right)^2$ a) $x^2 - 16x + 64 = (x-8)^2$ $\quad 2(x)(8)$, 8^2

$\left(\frac{50}{2}\right)^2$ b) $x^2 + 50x + 625 = (x+25)^2$

$\left(\frac{7}{2}\right)^2$ c) $x^2 + 7x + 49/4 = \left(x + \frac{7}{2}\right)^2$

Solve by completing the square (CTS)

ex. 2 $x^2 + 6x - 8 = 0$

$x^2 + 6x + 9 = 8 + 9$

$\sqrt{(x+3)^2} = \sqrt{17}$

$x + 3 = \pm\sqrt{17}$

$x = -3 \pm \sqrt{17}$

ex. 3 $x^2 - 12x + 44 = 0$

$x^2 - 12x + 36 = -44 + 36$

$\sqrt{(x-6)^2} = \sqrt{-8}$ $\quad i\sqrt{8}$

$x - 6 = \pm 2i\sqrt{2}$

$x = 6 \pm 2i\sqrt{2}$

ex. 4 $4x^2 - 12x + 4 = 0$

$\frac{4}{4}$

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

$\left(-\frac{3}{2}\right)^2$ $x^2 - 3x + \frac{9}{4} = -1 + \frac{9}{4}$

$\sqrt{(x - \frac{3}{2})^2} = \sqrt{\frac{5}{4}}$

$x - \frac{3}{2} = \pm\frac{\sqrt{5}}{2}$

$x = \frac{3}{2} \pm \frac{\sqrt{5}}{2}$ or $\frac{3 \pm \sqrt{5}}{2}$