

Key

Completing the square - day two

Warm-up:

1) Simplify: $i(4-2i)$

$$4i - 2i^2$$

$$\boxed{4i + 2}$$

2) i^{59}

$$i^{59} = i^3 = \boxed{-i}$$

3) $\sqrt{-\frac{125}{81}}$

$$= \frac{\sqrt{-125}}{\sqrt{81}} = \frac{\sqrt{-1} \sqrt{25} \sqrt{5}}{\sqrt{81}} = \boxed{\frac{5i\sqrt{5}}{9}}$$

4) Write 2 complex numbers with a product of 10.

$$\boxed{2i \cdot -5i}$$

$$\begin{array}{l} -10i^2 \\ -10 \cdot -1 \\ 10 \end{array}$$

5) Complete the square: $x^2 - 8x + 14$

$$(x^2 - 8x + 16) - 16 + 14$$

$$\boxed{(x-4)^2 - 2}$$

Completing the Square when $a \neq 1$

Rewrite in Vertex Form:

6) $5x^2 - 10x + 8$

$$5(x^2 - 2x + 1) - 5 + 8$$

↑
really added
in 5·1!!!

$$\boxed{5(x-1)^2 + 3}$$

7) $-2x^2 - 16x - 3$

$$-2(x^2 + 8x + 16) + 32 - 3$$

↑
really subtracted
-2·16

$$\boxed{-2(x+4)^2 + 29}$$

$$8) 3x^2 + 36x - 7$$

$$3(x^2 + 12x + 36) - 108 - 7$$

$$\boxed{3(x+6)^2 - 115}$$

$$9) -x^2 + 6x - 20$$

$$-(x^2 - 6x + 9) + 9 - 20$$

$$\boxed{-(x-3)^2 - 11}$$

$$10) -4x^2 - 64x + 3$$

$$-4(x^2 + 16x + 64) + 256 + 3$$

$$\boxed{-4(x+8)^2 + 259}$$