Warm up: Simplify and write your answer in standard form

1. $\dfrac{(7 - 3i)}{2i}\cdot\dfrac{i}{i} = \dfrac{7i-3i^2}{2i^2} = \dfrac{3+7i}{-2} = -\dfrac{3}{2} - \dfrac{7}{2}i$

2. $(3 + 2i)^2$

$(3+2i)(3+2i)$

$9 + 12i + 4i^2$

$9 + 12i - 4$

$5 + 12i$

3. $\dfrac{-3i^5 \cdot 4i^{14}}{5i^2}$

$\dfrac{+12i^{19}}{+5i^2} = \dfrac{12i^{19}}{-5}$

$-\dfrac{12i}{-5} = \dfrac{12i}{5}$

4. Factor completely

$9x^3 + 18x^2 - x - 2$

$(9x^3 + 18x^2)(x - 2)$

$9x^2(x+2) - 1(x+2)$

$(9x^2-1)(x+2)$

$(3x+1)(3x-1)(x+2)$

11. $4x^3+10x^2-28x-70=0$

$2(2x^3+5x^2)(14x-35)=0$

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

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

$x^2-7=0$ $\quad$ $2x+5=0$

$\sqrt{x^2}=\sqrt{7}$ $\quad$ $2x=-5$

$x=\pm\sqrt{7}$ $\quad$ $x=-\dfrac{5}{2}$

Solve the **quadratic equations** using the **square root method**.

1. $4w^2 - 9 = 0$

$4w^2 = 9$

$\sqrt{w^2} = \pm\sqrt{\frac{9}{4}}$

$w = \pm\frac{3}{2}$

$ax^2+bx+c=0$ sq. rt. method when $b=0$

2. $y^2 + 36 = 0$

$\sqrt{y^2} = \pm\sqrt{-36}$

$y = \pm 6i$

3. $4m^2 + 48 = 0$

$4m^2 = -48$

$\sqrt{m^2} = \pm\sqrt{-12}$

$m = \pm 2i\sqrt{3}$

(or $)^2 = \#$

4. $\sqrt{(b-2)^2} = \pm\sqrt{-36}$

$b - 2 = \pm 6i$

$b = 2 \pm 6i$

Solve the **quadratic equations** using the **square root method**.

5. $3(x-5)^2 + 29 = 2$

$-29 \quad -29$

$3(x-5)^2 = -27$

$\sqrt{(x-5)^2} = \pm\sqrt{-9}$

$x - 5 = \pm 3i$

$x = 5 \pm 3i$

6. $2\left(\frac{1}{2}a + 1\right)^2 + 35 = -5$

$2\left(\frac{1}{2}a+1\right)^2 = -40$

$\sqrt{\left(\frac{1}{2}a+1\right)^2} = \pm\sqrt{-20}$

$\frac{1}{2}a + 1 = \pm 2i\sqrt{5}$

$-1 \quad -1$

$\frac{1}{2}a = -1 \pm 2i\sqrt{5}$

$\times 2 \quad \times 2$

$a = -2 \pm 4i\sqrt{5}$

Completing the square (basic)...refresher:
(sit back, think, and observe)

$ax^2 + bx + c = 0$

$x^2 + 6x + 25 = 0$

① move c

② complete the square $\left(\frac{b}{2}\right)^2$

③ Factor perfect square trinomial $\left(x \pm \frac{b}{2}\right)^2$

④ Solve using sqrt. method

$x^2 + 6x + 9 = -25 + 9$

$\left(\frac{6}{2}\right)^2 = (3)^2$

$\sqrt{(x+3)^2} = \sqrt{-16}$

$x + 3 = \pm 4i$

$x = -3 \pm 4i$

Solve by completing the square.

7. $x^2 + 10x + 29 = 0$

$x^2 + 10x + 25 = -29 + 25$

$\left(\frac{10}{2}\right)^2$

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

$x + 5 = \pm 2i$

$x = -5 \pm 2i$

8. $x^2 - 4x + 22 = 0$

$x^2 - 4x + 4 = -22 + 4$

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

$\sqrt{(x-2)^2} = \sqrt{-18}$

$x - 2 = \pm 3i\sqrt{2}$

$x = 2 \pm 3i\sqrt{2}$

Completing the square... kick it up a notch...

$4x^2 - 8x + 5 = 0$

Factor out leading coeff. before CTS

$4x^2 - 8x \_\_\_ = -5 \_\_\_$

$4(x^2 - 2x \pm 1) = -5 + 4$

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

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

$x - 1 = \pm\frac{i}{2}$

$x = 1 \pm \frac{i}{2}$

or

$x^2 - 2x + \frac{5}{4} = 0$

$x^2 - 2x \pm 1 = -\frac{5}{4} \pm 1$

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

$x - 1 = \pm\frac{i}{2}$

$x = 1 \pm \frac{i}{2}$

9. $3x^2 + 24x + 37 = 0$

$3x^2 + 24x \_\_\_ = -37 \_\_\_$

$3(x^2 + 8x \pm 16) = -37 \pm 48$

$3(x+4)^2 = 11$

$\sqrt{(x+4)^2} = \pm\sqrt{\frac{11}{3}}$ $\pm\frac{\sqrt{11}}{\sqrt{3}}\frac{\sqrt{3}}{\sqrt{3}}$

$x + 4 = \pm\frac{\sqrt{33}}{3}$

$x = -4 \pm \frac{\sqrt{33}}{3}$

10. $2x^2 - 20x + 53 = 0$

$2x^2 - 20x \_\_\_ = -53 \_\_\_$

$2(x^2 - 10x \pm 25) = -53 \pm 50$

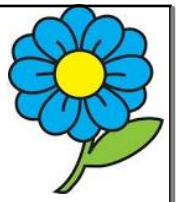
$2(x-5)^2 = -3$

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

$x - 5 = \pm\frac{i\sqrt{6}}{2}$

$x = 5 \pm \frac{i\sqrt{6}}{2}$

Homework~



WS #8 p. 14-16

Review ~~Thurs~~ Tues
Test ~~Fri~~ Wed.

I can solve quadratic equations by completing the square.