Complex solutions when using the Quadratic Formula

Find ALL solutions

$x^2 - 14x + 65 = 0$

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

$x = \frac{14 \pm \sqrt{196 - 4(1)(65)}}{2(1)}$

$x = \frac{14 \pm \sqrt{64}}{2} = \frac{14 \pm 8i}{2} = 7 \pm 4i$

Find ALL solutions

$2x^2 - 10x + 17 = 0$

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

$x = \frac{10 \pm \sqrt{100 - 4(2)(17)}}{2(2)}$

$x = \frac{10 \pm \sqrt{-36}}{4} = \frac{10 \pm 6i}{4} = \frac{5 \pm 3i}{2}$

Find ALL solutions

$4x^2 + 7x + 15 = 0$

$b = -191$

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

$x = \frac{-7 \pm \sqrt{-191}}{8}$

you can't simplify $\sqrt{-191}$

Find ALL solutions

$-3x^2 + 8x - 9 = 0$

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

$b^2 - 4ac = -44$

$x = \frac{-8 \pm \sqrt{-44}}{-6} = \frac{-8 \pm \sqrt{-4 \cdot 11}}{-6} = \frac{-8 \pm 2i\sqrt{11}}{-6}$

$= \frac{-4 \pm i\sqrt{11}}{-3}$

Now you can finish Hwk #18

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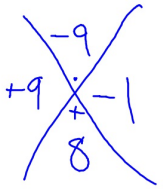
Problems 13-15, 17, 18, 20, 21

simplify imaginary solutions

Find ALL FOUR solutions by factoring.

$$x^4 + 8x^2 - 9 = 0$$

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



$x^2+9=0$ $\quad$ $x^2-1=0$

$\sqrt{x^2}=\sqrt{-9}$ $\quad$ $\sqrt{x^2}=\sqrt{1}$

$x=\pm 3i$ $\quad$ $x=\pm 1$

Write this complex number in Standard Form.

$$\frac{3}{4-2i}\cdot\frac{(4+2i)}{4+2i} = \frac{12+6i}{20} = \frac{12}{20}+\frac{6i}{20}$$

$$= \frac{3}{5}+\frac{3}{10}i$$

4^2+2^2

$16+4$

$=20$

Write this complex number in Standard Form.

$$\frac{(5-i)}{2+3i}\cdot\frac{(2-3i)}{2-3i} = \frac{7-17i}{13}$$

$4+9=13$

$$= \frac{7}{13}-\frac{17}{13}i$$

	5	$-i$
2	10	$-2i$
$-3i$	$-15i$	$+3i^2$ $=-3$