Bellwork Alg 2A Tuesday, March 21, 2017

1. Simplify this expression. No decimals in your answer. $\dfrac{(12i^4)^2}{(9i^3)^2(2i^5)^3}$

Find all Exact Complex solutions (this means real and imaginary) to each quadratic equation. Simplify all radicals.

2. $3x^2 + 158 = 62$

3. $2(x+3)^2 + 38 = 7$

4. $-5(x-9)^2 + 313 = 68$

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ANSWERS

1. Simplify this expression. No decimals in your answer. $\dfrac{(12i^4)^2}{(9i^3)^2(2i^5)^3} = \dfrac{144\,i^8}{(81\,i^6)(8i^{15})}$

$i^8 = 1$
$i^6 = -1$
$i^{15} = -i$

$\dfrac{144(1)}{(81)(-1)(8)(-i)} = \dfrac{144}{648\,i} = \boxed{\dfrac{2}{9i}}$

Find all Exact Complex solutions (this means real and imaginary) to each quadratic equation. Simplify all radicals.

2. $3x^2 + 158 = 62$

$-158 \quad -158$

$\dfrac{3x^2}{3} = \dfrac{-96}{3}$

$\sqrt{x^2} = \sqrt{-32} \to 16 \cdot 2$

$\boxed{x = \pm 4i\sqrt{2}}$

3. $2(x+3)^2 + 38 = 8$

$-38 \quad -38$

$\dfrac{2(x+3)^2}{2} = \dfrac{-30}{2}$

$\sqrt{(x+3)^2} = \sqrt{-15}$

$x + 3 = \pm i\sqrt{15}$

$-3 \quad -3$

$\boxed{x = -3 \pm i\sqrt{15}}$

4. $-5(x-9)^2 + 313 = 68$

$-313 \quad -313$

$\dfrac{-5(x-9)^2}{-5} = \dfrac{-245}{-5}$

$\sqrt{(x-9)^2} = \sqrt{49}$

$x - 9 = \pm 7$

$x = +7+9$
$x = -7+9$

$\boxed{x = 2, 16}$

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