8.1 -- 2016 Complex Numbers

Tuesday, November 22, 2016 12:56 PM

8.1 Complex Numbers $\sqrt{-1} = i$ $i^2 = -1$ Basic Concepts of Complex Numbers . Complex Solutions of Equations . Operations on Complex Numbers Write each number as a product of a real number and i. 18. $\sqrt{-36}$ 22. $\sqrt{-500}$ 24. $-\sqrt{-80}$ √_1•100•5 -1.16.5 10159 $48. \ \frac{\sqrt{-12} \cdot \sqrt{-6}}{\sqrt{8}}$ 40. $\sqrt{-5} \cdot \sqrt{-15}$ i 15 · ivis 215. 16 $i^{2}\sqrt{5^{2}.3}$ Write each number in standard form, a + bi. -159

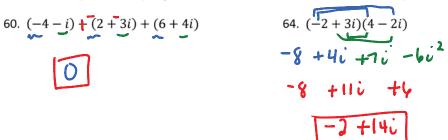
54. $\frac{-5+\sqrt{-50}}{10}$	-5+	5112	-1	+ 12.
	10	10 -	2	' 2 '

Solve each quadratic equation and express all nonreal complex solution in terms of i.

28.
$$x^{2} + 48 = 0$$

 $\sqrt[3]{x^{2} - \sqrt{-48}}$
 $\chi = \pm \sqrt{-1 \cdot 16 \cdot 3}$
 $\chi = \pm 4i \sqrt{3}$
 $X = -b \pm \sqrt{b^{2} - 4ac}$
 $\chi = -3 \pm \sqrt{9 - 4(2)(3)}$
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Find each sum, difference, or product. Write the answer in standard form, a + bi.



$$78. -5i(4-3i)^{2}$$

$$-5i(4-3i)(4-3i)$$

$$-5i(16 - 13i - 13i + 9i^{2})$$

$$-5i(16 - 24i - 9]$$

$$-5i(7 - 24i]$$

$$-35i + 120i^{2}$$

$$-120 - 35i$$

80.
$$(3-i)(3+i)(2-6i)$$

 $9+3i-3i-i^2$
 $10(2-6i)$
 $20-60i$

Find each quotient. Write the answer in standard form, a + bi.

Find each quotient. Write the answer in standard form,
$$a + bi.$$

$$104. \frac{12}{-i} \cdot \frac{i}{b}$$

$$96. \frac{14+5i}{3+2i} \cdot \frac{3-2i}{3-2i} = \frac{42-28i+15i-10i^2}{9-6i+46i} = \frac{42}{-14i^2}$$

$$= \frac{52-13i}{13}$$

$$4-i$$

$$4-i$$