

Complex Numbers

$$a + bi$$

real # imag. #

Jul 31-7:49 AM

$$i = \sqrt{-1}$$

$$2^2 = 4$$

$$(-2)^2 = 4$$

$$\sqrt{4} = \pm 2$$

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←

$$\sqrt{-1} = i$$

$$\sqrt{-16} = 4i$$

$$\sqrt{-81} = 9i$$

$$\sqrt{-45} = 3i\sqrt{5}$$

4
9
16
25
36

9 · 5
3 · 3 · 5

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$$\sqrt{-200} = 10i\sqrt{2}$$

100 2

4
9
16
25
36

100 81 64 49 36

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$$i = i$$

$$i^2 = -1$$

$$i^3 = -i$$

$$i^4 = 1$$

$$\sqrt{-1} = i$$

$$\sqrt{-1} \cdot \sqrt{-1} = -1$$

$$\sqrt{-1} \cdot \sqrt{-1} \cdot \sqrt{-1} = -i$$

$$\sqrt{-1} \cdot \sqrt{-1} \cdot \sqrt{-1} \cdot \sqrt{-1} = 1$$

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$$i^{13} = i^4 \cdot i^4 \cdot i^4 \cdot i = i$$

$$i^{27} = i^3 = -i$$

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$$i^{54} = i^2 = -1$$

$$= i^4 \cdot i^4 \cdot i^4 \cdot i^4 \dots i^2$$

$$4 \overline{) 54}$$

$$\underline{4}$$

$$14 \frac{2}{2}$$

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$$i^{72} = i^0 = 1$$

$$4 \overline{) 72}$$

$$\underline{18}$$

$$4$$

$$32$$

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$$i^7 = \textcircled{-i} = i^3$$

$$i^{24} = i^0 = 1$$

$$i^{144} = -1$$

$$= i^2$$

25

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+/- of complex #'s

9. $(3 + 2i) + (7 + 6i)$

$$10 + 8i$$

10. $(6 - 5i) - (1 + 2i)$

$$\underline{6} - \underline{5i} - \underline{1} - \underline{2i}$$

$$5 - 7i$$

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11. $(9 - 4i) - (-2 + 3i)$

$$9 - 4i + 2 - 3i$$

$$11 - 7i$$

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12. $9 - (10 + 2i) - 5i$

$$9 - 10 - 2i - 5i$$

$$-1 - 7i$$

13) $(11i^4 + 4i^3) - (2i^4 - 6i^3)$

$$11i^4 + 4i^3 - 2i^4 + 6i^3$$

$$9i^4 + 10i^3$$

$$\begin{matrix} 9 \cdot 1 & 10(-i) \\ 9 & -10i \end{matrix}$$

$$9 - 10i$$

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Jul 31-10:13 AM

$$\begin{aligned} 11) & (5 + i^3) - (3 - i^3) \\ & 5 + i^3 - 3 + i^3 \\ & 2 + 2i^3 \end{aligned}$$

$x + x = 2x$

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$$\begin{aligned} 18) & -i^5 + i^3 \\ & -i + -i = -2i \end{aligned}$$

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