

Write the Complex Conjugate $a + bi$ and $a - bi$

1. $12 + 7i$ $12 - 7i$

2. $-2i$ $2i$

3. $-14 - 5i$ $-14 + 5i$

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Dividing Complex Numbers: Simplify

1. $\frac{2}{3-i} \cdot \frac{3+i}{3+i} = \frac{2(3+i)}{10} = \frac{3+i}{5} = \frac{3}{5} + \frac{1}{5}i$
 $a+bi$

D: $(3-i)(3+i)$
 $9 + 3i - 3i - i^2$
 $9 - (-1)$
 $= 10$

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Dividing Complex Numbers: Simplify

$$2. \quad \frac{4+i}{2+i} \cdot \frac{2-i}{2-i} = \frac{9-2i}{5} = \frac{9}{5} - \frac{2}{5}i$$

$$\begin{aligned} N: (4+i)(2-i) \\ 8-4i+2i-i^2 \\ 8-2i+1 \\ 9-2i \end{aligned}$$

$$\begin{aligned} D: (2+i)(2-i) \\ 4-2i+2i-i^2 \\ 4+1 \\ 5 \end{aligned}$$

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Dividing Complex Numbers: Simplify

$$3. \quad \frac{7-i}{5i} \cdot \frac{-5i}{-5i} = \frac{-5-35i}{25} = \frac{-5}{25} - \frac{35}{25}i = \boxed{-\frac{1}{5} - \frac{7}{5}i} \text{ BEST!}$$

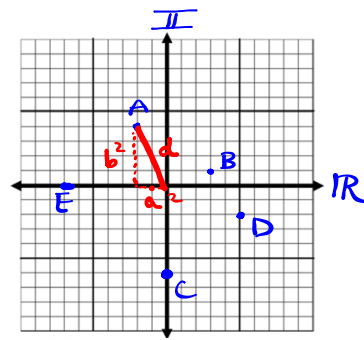
$$\begin{aligned} N: -5i(7-i) \\ -35i+5i^2 \\ -5-35i \end{aligned}$$

$$\begin{aligned} D: -25i^2 \\ = 25 \end{aligned}$$

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Graph the complex number.

- A. $-2+4i$ $(-2, 4)$
- B. $3+i$ $(3, 1)$
- C. $-6i$ $(0, -6)$
- D. $5-2i$ $(5, -2)$
- E. -7 $(-7, 0)$



Find the absolute value of a complex number.

The absolute value of a complex number is the distance of the graphed point from the origin.

$$|a+bi| = \sqrt{a^2+b^2}$$

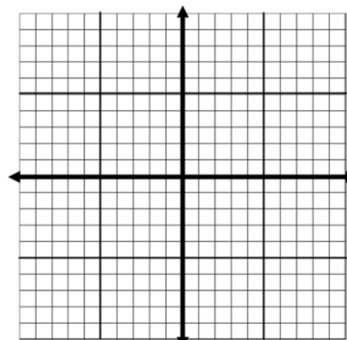
- A. $|-2+4i| = \sqrt{(-2)^2+4^2} = \sqrt{4+16} = \sqrt{20} = 2\sqrt{5}$ units ≈ 4.5
- B. $|3+i| = \sqrt{3^2+1^2} = \sqrt{10} \approx 3.2$
- C. $|-6i| = \sqrt{0^2+(-6)^2} = \sqrt{36} = 6$
- D. $|5-2i| = \sqrt{5^2+(-2)^2} = \sqrt{25+4} = \sqrt{29} \approx 5.4$
- E. $|-7| = 7$
 $\sqrt{0^2+(-7)^2} = \sqrt{49} = 7$

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Find the distance between 2 complex numbers.

- A. $-2+4i$ Find the distance between
- B. $3+i$ 1. A and B
- C. $-6i$ 2. C and D
- D. $5-2i$ 3. C and E
- E. -7

$(-2, 4)$ $(3, 1)$
 x_1, y_1 x_2, y_2
 $(0, -6)$ $(5, -2)$



1. $\sqrt{(3+2)^2+(1-4)^2}$
 $= \sqrt{5^2+(-3)^2}$
 $= \sqrt{25+9} = \sqrt{34} \approx 5.8$

2. $\sqrt{(5-0)^2+(-2+6)^2}$
 $= \sqrt{5^2+4^2}$
 $= \sqrt{25+16} = \sqrt{41} \approx 6.4$

$$d = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$$

3. $(0, -6)$ $(-7, 0)$
 $d = \sqrt{(-7)^2+(6)^2}$
 $= \sqrt{49+36} = \sqrt{85} \approx 9.2$

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