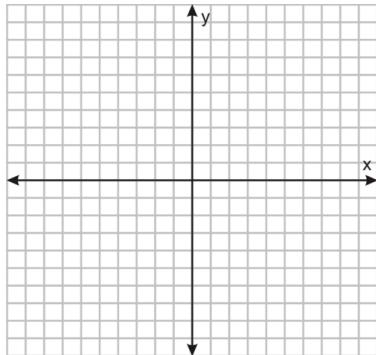
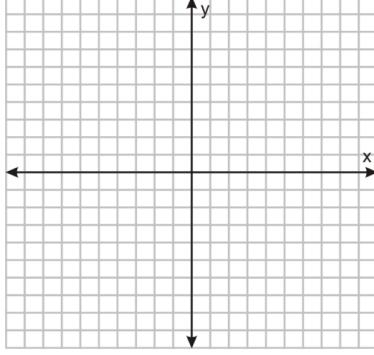


1. Illustrate each addition equation on the complex plane.

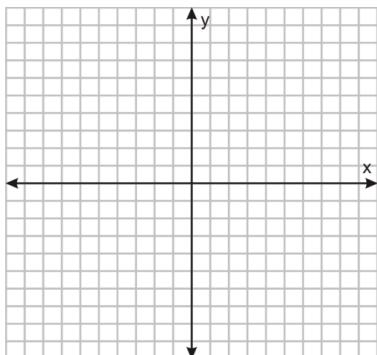
a. $(4 + i) + (2i) = 4 + 3i$



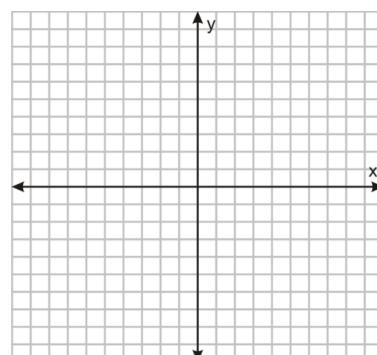
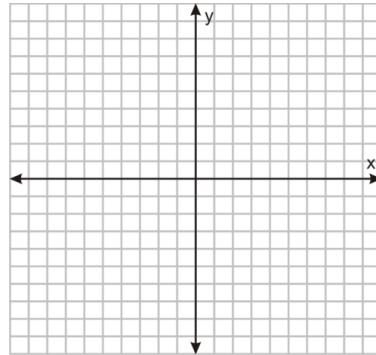
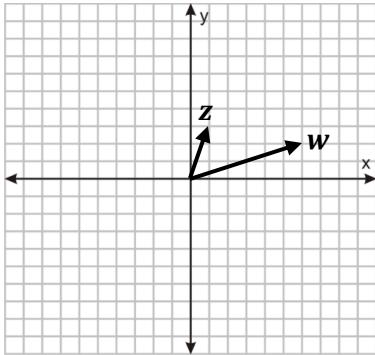
b. $(4 + i) + (4 - i) = 8$



c. $(4 + i) + (-3 + i) = 1 + 2i$

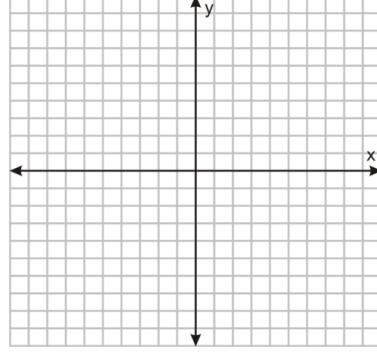
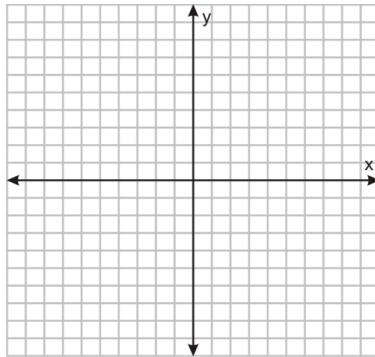
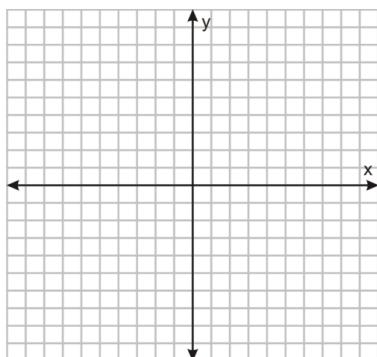


2. The graph below shows two complex numbers z and w . Graph each expression.



a. $z + w$
b. $2z$

a. $-w$
b. $2z + 2w$



a. $2z - w$
b. $z + wi$

a. $-3z$
b. $2z + w$

a. $w - z$
b. $w - 3z$

3. If $z = a + bi$ is a complex number, show that z and iz are the same distance from the origin.

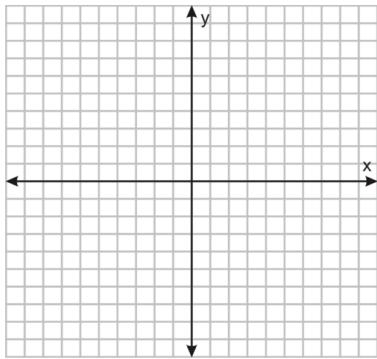
4. For each complex number, find the distance to the origin on the complex plane.

a. $3 - 2i$

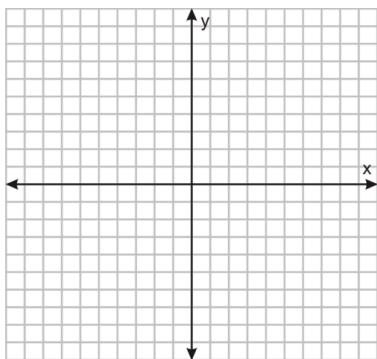
b. $-6 - 5i$

5. For each complex number z , graph z and iz as vectors on the same complex plane.

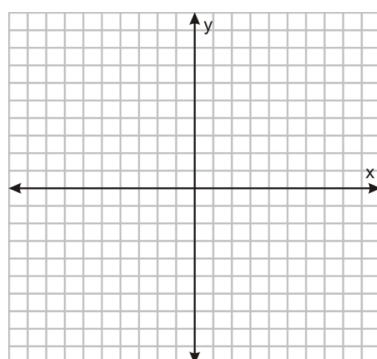
a. $z = 3 + 2i$



b. $z = -1 + 4i$



c. $z = -1 - 3i$



6. a. Describe the effect, in the complex plane, of multiplying a complex number by i^2 .

b. Describe the effect, in the complex plane, of multiplying a complex number by $-i$.

7. For each complex number, find its distance from the origin on the complex plane.

a. $3 + i$

b. $4 - i$

c. $(3 + i)(4 - i)$

d. $(2 + i)^2$

8. Order the following complex numbers from least to greatest, based on how far each number is from the origin.

$5 + 3i$

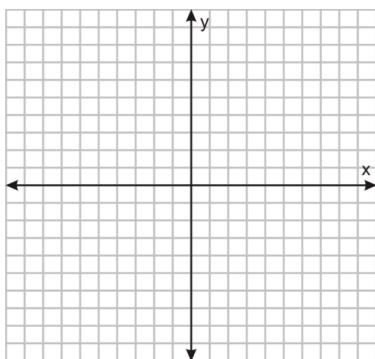
$2 - 7i$

8

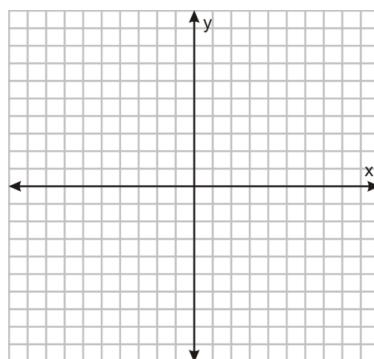
$-6 - 4i$

9. Suppose $z = 1 + i$. For each value of w , draw a diagram that shows z , w , and zw .

a. $w = 3 + 4i$



b. $w = 3i$



10. Find $|w|$.

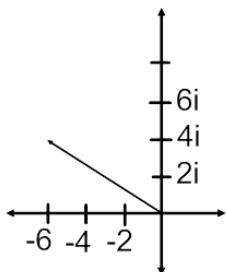
a. $w = -2 + 2i$

b. $w = -5 - 2i$

11. Let $z = 1 + i$ and $w = -2 - 7i$, Find the following:

- a. $|z|$ b. $|w|$ c. $|z + w|$ d. The distance from z to w .

12. Standardized Test Prep: Here is a graph of $2iz$ for a complex number z , on the complex plane. Which of the following numbers is z ?



a. $-3 + 2i$

b. $2 + 3i$

c. $3 - 2i$

d. $4 + 6i$

Simplify.

13. $(5x^3 - 2x^2 + 10) - (x^2 - x + 1)$	14. $-3x(x - 5)^2$
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Factor.

19. $14x^2 - 23x + 3$	20. $25x^2 - 16$
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