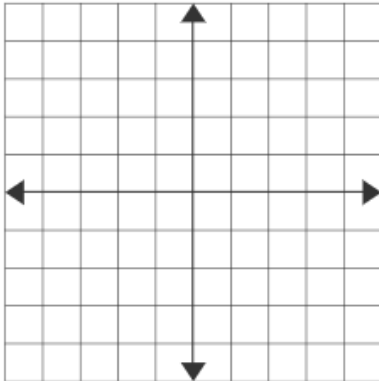1. Graph and label each complex number on the same complex plane.
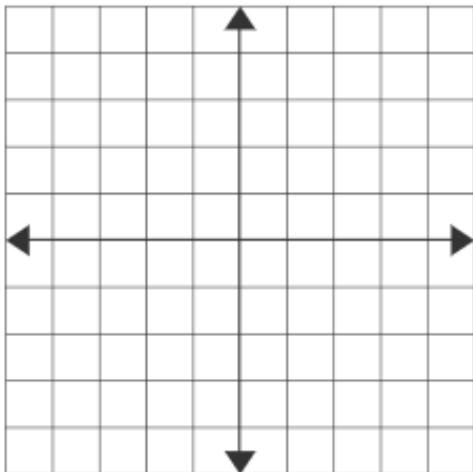
A) $4 + 3i$

B) $4 - 3i$

C) $-4 + 3i$

D) $-4 - 3i$

2. Name the conjugate pairs for Question #1.

3. You can write a complex number as $z = a + bi$. What can you say about a and b if z is located in the given quadrant.

A) Quadrant I   B) Quadrant II   C) Quadrant III   D) Quadrant IV

4. The solutions to the equation $x^3 - 8 = 0$ are: $x = 2, \ x = -1 + i\sqrt{3}, \ x = -1 - i\sqrt{3}$.

A) Compute the sum and product of the three solutions.

B) Graph all three solutions on the same complex plane.

C) The roots lie on the vertices of a triangle. Is this triangle equilateral, isosceles, or scalene? Justify your answer.

5. Find four complex numbers that lie on the vertices of a square on the complex plane.

6. Graph and label each complex number on the same complex plane.
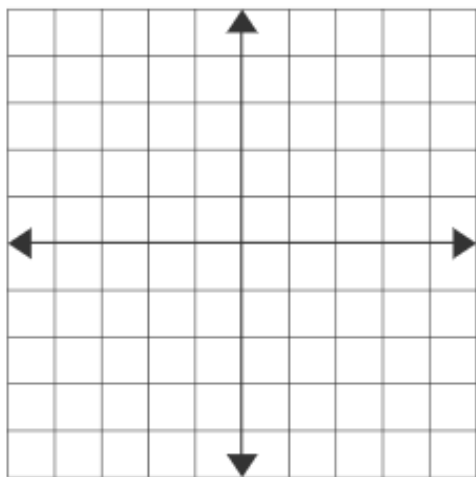
A) i^0
B) i^1
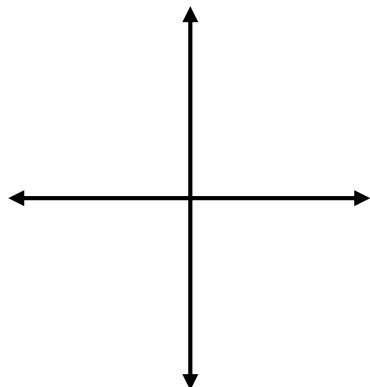C) i^2
D) i^3
E) i^4
F) i^5

7. Suppose $z = 5 + i$ and $w = 4 - i$. Which of the following numbers in NOT in Quadrant IV on the complex plane?

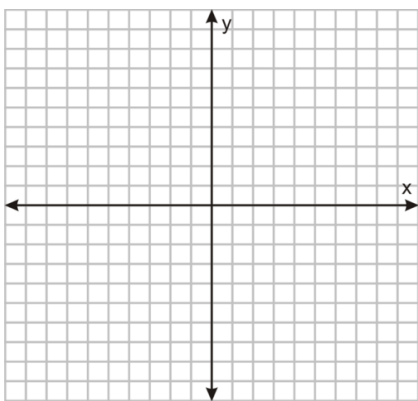A) zw B) w^2 C) $\bar{z}$ D) $3z + 2w$

8.   Suppose a and b are positive real numbers.

A) Graph what $a + bi$ and $a - bi$ might look like on the same complex plane.
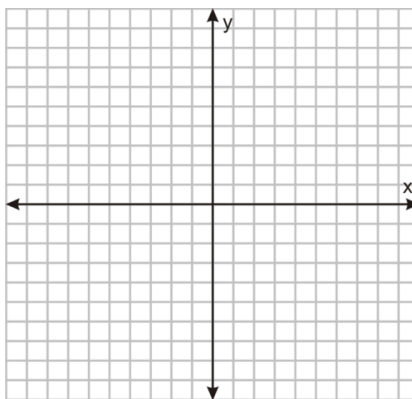
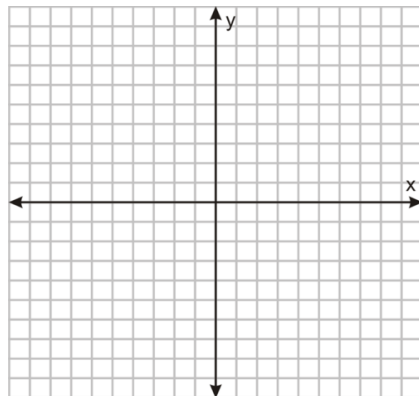B) Graph the sum of $z = a + bi$ and $\bar{z} = a - bi$.

9.   Suppose $z = 3 + i$ and $w = 2 - i$. Graph each group of numbers on the complex plane.
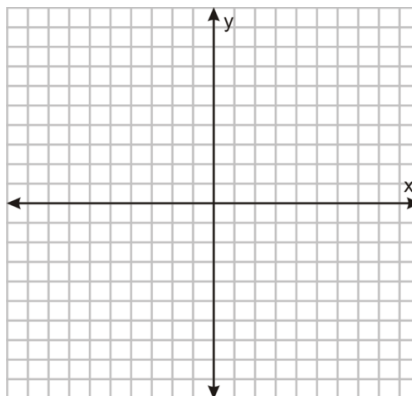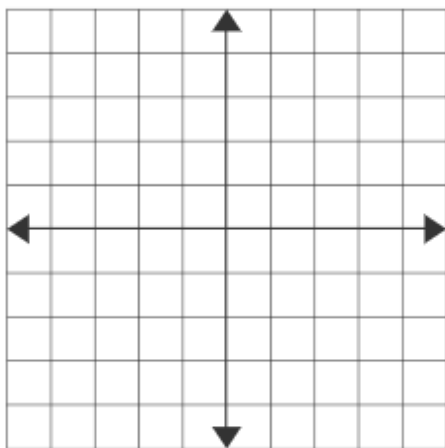
A) $w,\ 2w,\ 3w$

B) $z + w,\ z + 2w,\ z + 3w$

C) $\overline{w},\ \overline{2w},\ \overline{3w}$

D) $\overline{z + w},\ \overline{z + 2w},\ \overline{z + 3w}$

10.

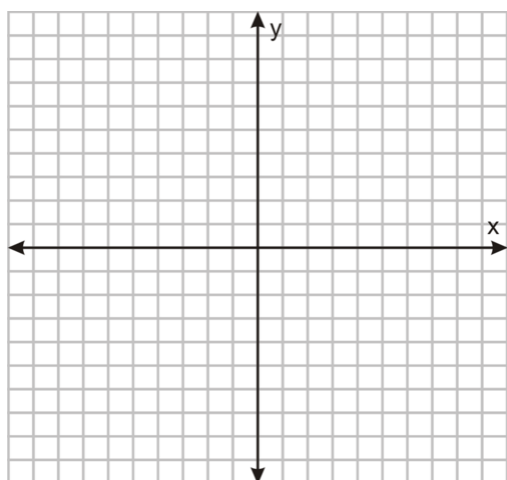Graph each number on the same complex plane.

A) i^{10}

B) i^{243}

C) i^{-10}

D) i^{-243}

11.

Graph and label each complex number on the same complex plane.
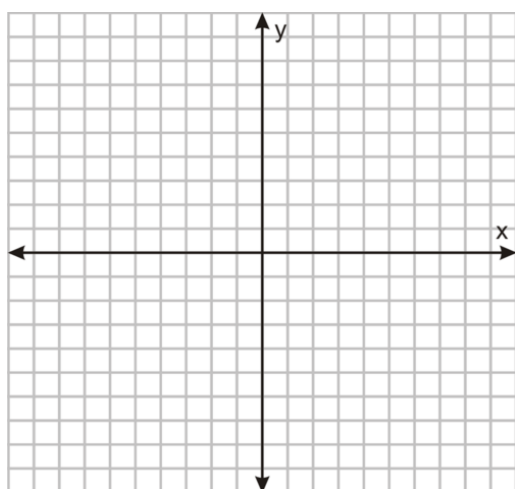
A) $-3 + i$

B) $2(-3 + i)$

C) $-(-3 + i)$

D) $-2(-3 + i)$

12.

Write each expression as a complex number $a + bi$. Then graph and label each complex number on the same complex plane.

A) $3 + 5i$

B) $(3 + 5i) \cdot i$

C) $(3 + 5i) \cdot i^2$

D) $(3 + 5i) \cdot i^3$

E) $(3 + 5i) \cdot i^4$