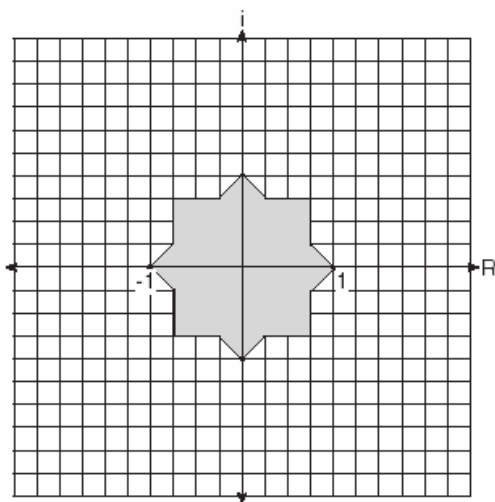


NAME: \_\_\_\_\_

1. 060108b

Fractal geometry uses the complex number plane to draw diagrams, such as the one shown in the accompanying graph.

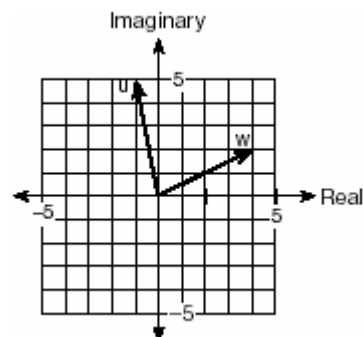


Which number is *not* included in the shaded area?

- [A]  $-0.9 - 0.9i$  [B]  $-0.9$   
 [C]  $-0.5 - 0.5i$  [D]  $-0.5i$

2. 080512b

Two complex numbers are graphed below.



What is the sum of  $w$  and  $u$ , expressed in standard complex number form?

- [A]  $5 + 7i$  [B]  $7 + 3i$   
 [C]  $-5 + 3i$  [D]  $3 + 7i$

3. 060906b

When the sum of  $-4 + 8i$  and  $2 - 9i$  is graphed, in which quadrant does it lie?

- [A] I [B] II [C] IV [D] III

4. 010916b

If  $z_1 = -3 + 2i$  and  $z_2 = 4 - 3i$ , in which quadrant does the graph of  $(z_2 - z_1)$  lie?

- [A] I [B] II [C] IV [D] III

NAME: \_\_\_\_\_

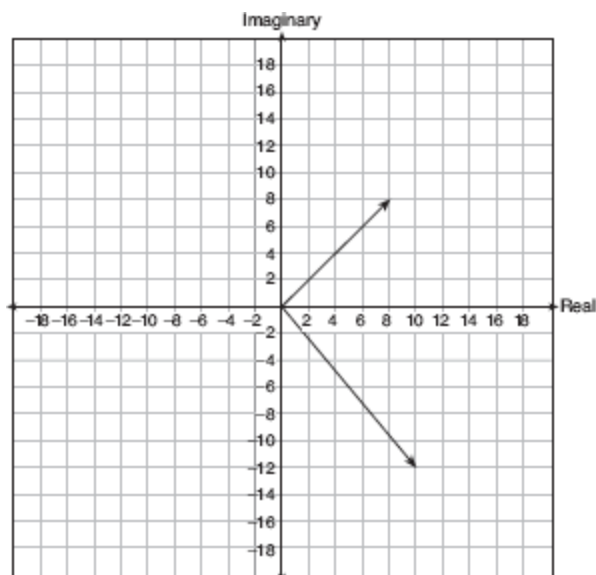
5. 080906b

On a graph, if point  $A$  represents  $2 - 3i$  and point  $B$  represents  $-2 - 5i$ , which quadrant contains  $3A - 2B$ ?

[A] IV    [B] III    [C] II    [D] I

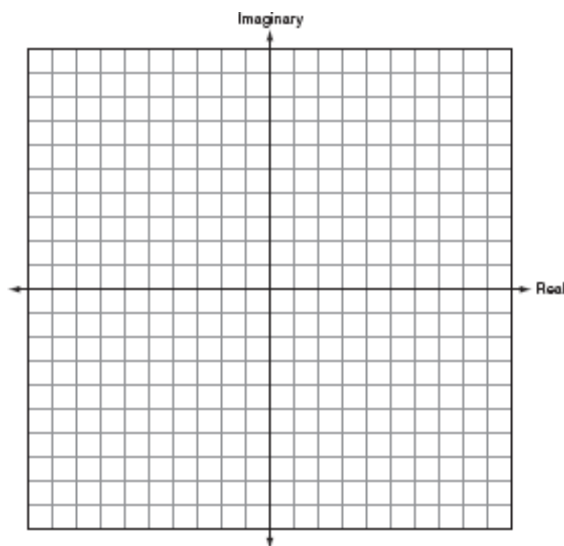
6. 060726b

On a stamp honoring the German mathematician Carl Gauss, several complex numbers appear. The accompanying graph shows two of these numbers. Express the sum of these numbers in  $a + bi$  form.



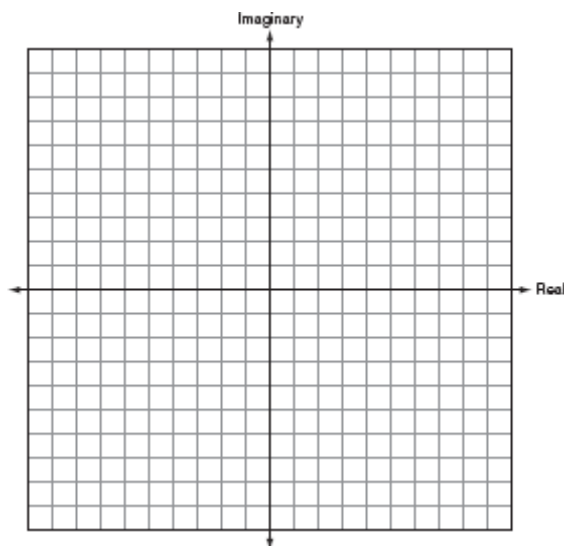
7. 060621b

Find the sum of  $-2 + 3i$  and  $-1 - 2i$ . Graph the resultant on the accompanying set of axes.



8. 010724b

On the accompanying set of axes, graphically represent the sum of  $3 + 4i$  and  $-1 + 2i$ .



[1] A \_\_\_\_\_

[2] D \_\_\_\_\_

[3] D \_\_\_\_\_

[4] C \_\_\_\_\_

[5] D \_\_\_\_\_

[2]  $18 - 4i$ , and appropriate work is shown,  
such as  $(8 + 8i) + (10 - 12i)$ .

[1] Appropriate work is shown, but one  
computational or graphing error is made.

or [1] Appropriate work is shown, but one  
conceptual error is made.

or [1] A graphic solution is drawn, but the  
sum is not expressed in  $a + bi$  form.

or [1]  $18 - 4i$ , but no work is shown.

[0] A zero response is completely incorrect,  
irrelevant, or incoherent or is a correct  
response that was obtained by an obviously

[6] incorrect procedure.

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[2]  $-3 + i$ , and an appropriate graph is drawn.

[1] The sum is found incorrectly, but an  
appropriate graph is drawn.

or [1]  $-3 + i$ , but no graph or an incorrect  
graph is drawn.

[0] A zero response is completely incorrect,  
irrelevant, or incoherent or is a correct  
response that was obtained by an obviously

[7] incorrect procedure.

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[2] A correct graph is drawn to represent  
 $2 + 6i$ .

[1] Appropriate work is shown, but one  
computational or graphing error is made.

or [1] Appropriate work is shown, but one  
conceptual error is made.

or [1] The sum  $2 + 6i$  is written, but no graph  
is drawn.

[0] A zero response is completely incorrect,  
irrelevant, or incoherent or is a correct  
response that was obtained by an obviously

[8] incorrect procedure.

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