1. Simplify the expression below and choose the interval the simplification is contained within.

$$12 - 7^2 + 9 \div 8 * 4 \div 13$$

A. $[60.92, 61.3]$

B. $[-37.11, -36.86]$

C. $[61.1, 61.59]$

D. $[-36.73, -36.27]$

E. None of the above

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2. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

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

A. $a \in [29, 34]$ and $b \in [-104, -98]$

B. $a \in [29, 34]$ and $b \in [98, 107]$

C. $a \in [66, 69]$ and $b \in [-81, -75]$

D. $a \in [46, 52]$ and $b \in [-25, -13]$

E. $a \in [66, 69]$ and $b \in [77, 83]$

---

3. Choose the **smallest** set of Complex numbers that the number below belongs to.

$$\sqrt{\frac{324}{529}} + \sqrt{176}i$$

A. Pure Imaginary

B. Not a Complex Number

C. Nonreal Complex

D. Irrational

E. Rational

4. Choose the **smallest** set of Real numbers that the number below belongs to.

$$\sqrt{\frac{576}{289}}$$

A. Integer

B. Irrational

C. Rational

D. Whole

E. Not a Real number

5. Choose the **smallest** set of Complex numbers that the number below belongs to.

$$\sqrt{\frac{0}{64}} + \sqrt{2}i$$

A. Irrational

B. Nonreal Complex

C. Pure Imaginary

D. Rational

E. Not a Complex Number

6. Simplify the expression below and choose the interval the simplification is contained within.

$$6 - 10^2 + 16 \div 14 * 11 \div 19$$

A. $[-94.12, -93.52]$

B. $[105.71, 106.28]$

C. $[106.56, 106.71]$

D. $[-93.86, -93.09]$

E. None of the above

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7. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$(4 - 9i)(7 + 2i)$$

A. $a \in [4, 11]$ and $b \in [65, 75]$

B. $a \in [27, 29]$ and $b \in [-19, -14]$

C. $a \in [43, 48]$ and $b \in [-56, -52]$

D. $a \in [43, 48]$ and $b \in [53, 56]$

E. $a \in [4, 11]$ and $b \in [-78, -66]$

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8. Choose the **smallest** set of Real numbers that the number below belongs to.

$$-\sqrt{\frac{104976}{324}}$$

A. Rational

B. Whole

C. Irrational

D. Integer

E. Not a Real number

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9. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$\frac{45 - 11i}{-8 + 7i}$$

A. $a \in [-438.5, -435.5]$ and $b \in [-2.06, -1.77]$

B. $a \in [-5, -3.5]$ and $b \in [-2.06, -1.77]$

C. $a \in [-3, -1.5]$ and $b \in [3.27, 3.7]$

D. $a \in [-6, -5.5]$ and $b \in [-1.78, -1.54]$

E. $a \in [-5, -3.5]$ and $b \in [-227.19, -226.88]$

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10. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$\frac{36 + 33i}{6 - 7i}$$

A. $a \in [-15.5, -14.5]$ and $b \in [4.5, 6]$

B. $a \in [-0.5, 1]$ and $b \in [4.5, 6]$

C. $a \in [-0.5, 1]$ and $b \in [449.5, 451]$

D. $a \in [5.5, 7]$ and $b \in [-5.5, -4]$

E. $a \in [4, 5.5]$ and $b \in [-2, 1]$
