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

$$(2 - 4i)(7 - 8i)$$

   A. $a \in [45, 47]$ and $b \in [8, 20]$

   B. $a \in [45, 47]$ and $b \in [-14, -5]$

   C. $a \in [-21, -9]$ and $b \in [43, 50]$

   D. $a \in [12, 15]$ and $b \in [32, 37]$

   E. $a \in [-21, -9]$ and $b \in [-48, -39]$

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

$$\sqrt{\frac{-616}{8}} + \sqrt{0}i$$

   A. Not a Complex Number

   B. Rational

   C. Irrational

   D. Nonreal Complex

   E. Pure Imaginary

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

$$11 - 2 \div 10 * 7 - (5 * 13)$$

   A. $[-54.1, -53.3]$

   B. $[74.4, 76.3]$

   C. $[59.4, 61.1]$

   D. $[-57.9, -54.9]$

   E. None of the above

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

$$-\sqrt{\frac{1638}{14}} + 5i^2$$

A. Rational

B. Not a Complex Number

C. Nonreal Complex

D. Pure Imaginary

E. Irrational

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

$$-\sqrt{\frac{529}{625}}$$

A. Not a Real number

B. Irrational

C. Whole

D. Integer

E. Rational

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

$$\sqrt{\frac{100}{81}}$$

A. Not a Real number

B. Whole

C. Rational

D. Irrational

E. Integer

---

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

$$\frac{27 - 22i}{5 + i}$$

A. $a \in [3.95, 4.5]$ and $b \in [-138, -135.5]$

B. $a \in [112.05, 113.3]$ and $b \in [-6.5, -4.5]$

C. $a \in [6, 6.65]$ and $b \in [-4, -2]$

D. $a \in [3.95, 4.5]$ and $b \in [-6.5, -4.5]$

E. $a \in [5.15, 5.9]$ and $b \in [-23, -20.5]$

---

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

$$12 - 18 \div 6 * 20 - (5 * 16)$$

A. $[-68.15, -66.15]$

B. $[88.85, 96.85]$

C. $[-849, -836]$

D. $[-131, -125]$

E. None of the above

---

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

$$\frac{45 + 44i}{-2 + 3i}$$

A. $a \in [-23, -20.5]$ and $b \in [14.5, 16]$

B. $a \in [3, 4]$ and $b \in [-18, -16.5]$

C. $a \in [3, 4]$ and $b \in [-223.5, -222]$

D. $a \in [41, 43.5]$ and $b \in [-18, -16.5]$

E. $a \in [-18, -15.5]$ and $b \in [2.5, 4]$

---

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

$$(-5 - 10i)(9 + 7i)$$

A. $a \in [-46, -44]$ and $b \in [-75, -68]$

B. $a \in [19, 28]$ and $b \in [123, 130]$

C. $a \in [-117, -109]$ and $b \in [52, 60]$

D. $a \in [19, 28]$ and $b \in [-126, -122]$

E. $a \in [-117, -109]$ and $b \in [-56, -46]$