

The Weekly Rigor

No. 104

“A mathematician is a machine for turning coffee into theorems.”

June 18, 2016

SAT Math Test Problem Children: Complex Numbers

(Part 3)

PROBLEMS

1. For $i = \sqrt{-1}$, what is the sum $(2 + 3i) + (4 + 5i)$?
2. For $i = \sqrt{-1}$, what is the sum $(5 + 2i) + (7 + 6i)$?
3. For $i = \sqrt{-1}$, what is the sum $(4 + i) + (2 + 10i)$?
4. For $i = \sqrt{-1}$, what is the sum $(6 + 4i) + (3 + i)$?
5. For $i = \sqrt{-1}$, what is the sum $(7 + 5i) + (-3 + 10i)$?
6. For $i = \sqrt{-1}$, what is the sum $(8 + 3i) + (-6 + i)$?
7. For $i = \sqrt{-1}$, what is the sum $(6 + 4i) + (-7 + 9i)$?
8. For $i = \sqrt{-1}$, what is the sum $(-4 + 4i) + (3 + 7i)$?
9. For $i = \sqrt{-1}$, what is the sum $(-5 + 4i) + (7 - 8i)$?
10. For $i = \sqrt{-1}$, what is the sum $(-3 + 2i) + (4 - 10i)$?

11. Which of the following complex numbers is equivalent to $\frac{1-3i}{6+2i}$? (Note: $i = \sqrt{-1}$)
 - A) $\frac{i}{2}$
 - B) $-\frac{i}{2}$
 - C) $\frac{1}{6} - \frac{3i}{2}$
 - D) $\frac{1}{6} + \frac{3i}{2}$

12. Which of the following complex numbers is equivalent to $\frac{5-7i}{10+4i}$? (Note: $i = \sqrt{-1}$)

A) $\frac{5}{10} + \frac{7i}{4}$

B) $\frac{5}{10} - \frac{7i}{4}$

C) $\frac{11}{58} - \frac{45i}{58}$

D) $\frac{11}{58} + \frac{45i}{58}$

13. Which of the following complex numbers is equivalent to $\frac{9-5i}{6+8i}$? (Note: $i = \sqrt{-1}$)

A) $\frac{7}{50} - \frac{51i}{50}$

B) $\frac{7}{50} + \frac{51i}{50}$

C) $\frac{9}{6} - \frac{5i}{8}$

D) $\frac{9}{6} + \frac{5i}{8}$

14. Which of the following complex numbers is equivalent to $\frac{11-3i}{8+2i}$? (Note: $i = \sqrt{-1}$)

A) $\frac{11}{8} - \frac{3i}{2}$

B) $\frac{41}{34} + \frac{3i}{4}$

C) $\frac{41}{34} - \frac{23i}{34}$

D) $\frac{11}{8} + \frac{3i}{2}$

“Only he who never plays, never loses.”