

Date Completed: _____
Mentor Initials: _____

A mentor can change everything.



Calculator (Basic)

Note: Use a Calculator for ALL questions.

1. If $x = \frac{4}{5} + \frac{5}{4}$, $y = \frac{4}{3} + \frac{3}{4}$, and $z = 1 + 1$, which of the following orders x , y , and z from greatest to least?
 - A. $x < y < z$
 - B. $y < z < x$
 - C. $y < x < z$
 - D. $z < x < y$
 - E. $z < y < x$

2. If $x = -2$ and $y = -1$, what is the value of $y^3 - y^2x - 2yx^2 + 4$?
 - A. -7
 - B. -3
 - C. 9
 - D. 13
 - E. 24

3. For $i^2 = -1$, $(i - 4)^2 =$
 - A. -17
 - B. $-8i + 15$
 - C. $8i - 15$
 - D. 15
 - E. 16

4. The fifth power of a number is 229,345,007. The number is between:
 - A. 1 and 10.
 - B. 10 and 100.
 - C. 100 and 1,000.
 - D. 1,000 and 100,000.
 - E. 100,000 and 100,000,000.

5. Which one of the following inequalities is true?
- A. $4 < \sqrt{5} < 6$
 - B. $\frac{2}{3} < \sqrt{\frac{2}{5}} < \frac{2}{7}$
 - C. $2 < 2(\sqrt{3}) < 3$
 - D. $\sqrt{5} < 6 < \sqrt{7}$
 - E. $\sqrt{3} < 2(\sqrt{3}) < 4$
6. For all $x > 0$, which of the following expressions is equivalent to $\frac{i}{9-i}$?
- A. $-\frac{1}{9}$
 - B. $\frac{1}{9}$
 - C. $\frac{1}{81} + \frac{1}{9}i$
 - D. $\frac{1}{82} + \frac{9}{82}i$
 - E. $-\frac{1}{82} + \frac{9}{82}i$
7. What is the value of $|-8| - |8 - 26|$?
- A. -26
 - B. -10
 - C. 10
 - D. 26
 - E. 42
8. Which of the following operations will produce the largest result when substituted for the blank in the expression $53 \text{ ____ } (-\frac{1}{55})$?
- A. Averaged with
 - B. Divided by
 - C. Minus
 - D. Plus
 - E. Multiplied by

9. In the standard (x, y) coordinate plane, given Parabola A with equation $y = 2x^2$, Parabola B is the image of Parabola A after a shift of 6 coordinate units to the left and 5 coordinate units down. Parabola B has which of the following equations?
- A. $y = 2(x - 5)^2 - 6$
 - B. $y = 2(x - 6)^2 - 5$
 - C. $y = 2(x - 6)^2 + 5$
 - D. $y = 2(x + 6)^2 - 5$
 - E. $y = 2(x + 5)^2 + 6$
10. The statement $4x - (x - 6) + 7 = 3x + 13$ is true for:
- A. $x = 0$ only.
 - B. $x = 6$ only.
 - C. $x = 8$ only.
 - D. no values of x .
 - E. all values of x .
11. The solution set of the equation $|x - 2| = x - 2$ is the set of all values of x such that:
- A. $x \geq 2$
 - B. $x \leq 2$
 - C. $x \geq 1$
 - D. $x \leq 1$
 - E. x is a real number
12. Which of the following is the solution set of $27^{x^2} = 9^{-5x-4}$?
- A. $\{-4, -\frac{2}{3}\}$
 - B. $\{-1, -\frac{8}{3}\}$
 - C. $\{-\frac{4}{3}, -2\}$
 - D. $\{1, 4\}$
 - E. $\{\frac{4}{3}, 2\}$

13. What is the set of real solutions for $|x|^2 - 2|x| - 3 = 0$?
- A. {3}
 - B. {-3, 3}
 - C. {-1, 3}
 - D. {1, -3}
 - E. {-3, -1, 1, 3}