

Math II Individual Test 2018

Please note that for all questions *NOTA* means none of the above. Good luck!

1. Compute: $16^{0.5} + \sqrt{25}$
A) 9 B) $\frac{21}{4}$ C) 13 D) 41 E) NOTA
2. Natalie buys a pen and a notebook for \$1.10 total. The notebook costs \$1 more than the pen. How much does the pen cost?
A) \$0.10 B) \$0.50 C) \$1.01 D) \$1.05 E) NOTA
3. Compute: $6 + 2(8 - 4^0) - 5 + (8 \div 2)^{0.5} + 1$
A) 18 B) 20 C) 29 D) 54 E) NOTA
4. How many prime numbers are there between 0 and 30 (including 0 and 30)?
A) 7 B) 8 C) 11 D) 12 E) NOTA
5. Jimmy has half a pie leftover and eats $\frac{1}{4}$ of it. His friend Brett comes over and eats $\frac{1}{3}$ of the remaining pie. Then Lucas comes over and eats $\frac{1}{4}$ of what is left. How much of the original full pie is left?
A) $\frac{1}{16}$ B) $\frac{1}{8}$ C) $\frac{3}{16}$ D) $\frac{3}{8}$ E) NOTA
6. The radii of two circles are in a ratio of 2:5. If the larger circle has an area of 225π , what is the area of the smaller circle?
A) 36π B) 90π C) 900π D) 8100π E) NOTA
7. Skoufis wants to know the volume of his pet fish. The rectangular tank of the fish has a base with dimensions 60 cm by 30 cm, and after he drops his fish in the tank, the water level rises by 2 cm. What is the volume of his fish in cm^3 ?
A) 200 B) 80 C) 1860 D) 3600 E) NOTA
8. Charlie wants to put fencing around his garden, which has an area of 3200 ft^2 . The width of his garden is twice its length. Which of the following answer choices is closest to the length of the garden in feet?
A) 533 B) 40 C) 80 D) not enough information E) NOTA

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9. Determine the number of terms in this finite sequence:
 $\{8, 1, -6, \dots, -41\}$
 A) 5 B) 7 C) 8 D) 9 E) NOTA
10. Thomas rolls a standard die and tosses a coin. What is the probability that the die shows a prime number AND the coin shows tails?
 A) $\frac{1}{4}$ B) $\frac{1}{3}$ C) $\frac{1}{2}$ D) 1 E) NOTA
11. Andrew has a rectangular prism that is 5x7x1 inches. He decided to cut 3x5x1 inches out of the center of the prism. What is the surface area of the resulting shape?
 A) 35 B) 56 C) 64 D) 80 E) NOTA
12. What is 10% of $\frac{1}{3}$ of 25% of $\frac{1}{2}$ of 75% of 320? Round to the nearest number if needed.
 A) 1 B) 10 C) 355 D) 619 E) NOTA
13. When x is an even integer, $\Delta x = 3x - 3$; when x is an odd integer, $\Delta x = 2x - 2$. What is the value of $(\Delta 7)^{\Delta 2}$?
 A) 144 B) 324 C) 1728 D) 5832 E) NOTA
14. Luca bought a 14-inch diameter pizza and cut it into 8 slices. What is the perimeter of one slice of pizza in inches?
 A) $14 + \frac{1}{8}\pi$ B) $14 + \frac{7}{4}\pi$ C) $7 + \frac{7}{4}\pi$ D) $14 + 7\pi$ E) NOTA
15. What is the slope of $3x - 4 = 2y + 2$?
 A) $-\frac{1}{3}$ B) $\frac{2}{3}$ C) 1 D) $\frac{3}{2}$ E) NOTA
16. The numbers below follow a certain pattern. What is the 13th term of the sequence?
 $\frac{2}{5}, \frac{1}{2}, \frac{4}{7}, \frac{5}{8}, \frac{2}{3}, \dots$
 A) $\frac{52}{55}$ B) $\frac{4}{5}$ C) $\frac{13}{18}$ D) $\frac{14}{17}$ E) NOTA
17. Mike went out to eat breakfast. He paid for his waffles and paid an additional \$0.90 in sales tax. If the sales tax rate is 7.5%, what was the original cost of the waffles, before tax?
 A) \$6.75 B) \$7.65 C) \$8.00 D) \$12.00 E) NOTA

18. What quadrant of the Cartesian plane does $y = x^2 - 3x + 1$ not pass through?
A) I B) II C) III D) IV E) NOTA
19. If $3 * 3^0 = 27x^{-2}$, what is the sum of the solutions of x?
A) 0 B) $\frac{1}{81}$ C) 3 D) 9 E) NOTA
20. What is the largest number x for which $\frac{1}{x+3} \geq \frac{3}{x+1}$?
A) -4 B) 0 C) 4 D) 9 E) NOTA
21. What is the y-intercept of a line passing through the points (-3,6) and (6,0)?
A) -4 B) -2 C) 4 D) 6 E) NOTA
22. Which of the following is NOT an accurate description of the number π ?
A) Constant B) Prime C) Irrational D) Positive E) NOTA
23. It takes Michael 5 hours to paint his room. James, however, can paint the same room in 3 hours. If Michael and James work together to paint the same room, how long will it take them to finish?
A) $\frac{1}{4}$ B) $\frac{8}{5}$ C) $\frac{15}{8}$ D) 4 E) NOTA
24. Ami, Brandon, Charlie, Dina, and Elijah went to the movie theater together. The theater was packed, but luckily there were five seats open that were all next to each other. How many different ways can the people be seated?
A) 20 B) 25 C) 120 D) 3125 E) NOTA
25. One-half of Wally's age in two years plus one-third his age three years prior equals 20 years. How old is Wally today?
A) 25 B) 17 C) 22 D) 18 E) NOTA
26. A boat can travel 26 miles upstream in 2 hours at its maximum speed. The same boat travels 51 miles downstream in 3 hours at its maximum speed. What is the speed of the current in the river in miles per hour?
A) 2 B) 4 C) 16 D) 30 E) NOTA

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27. Find the sum of all values of x if $|x - |x - 1|| - x = 1$.

- A) 2 B) 3 C) 6 D) 1 E) NOTA

28. If it takes 36 minutes for 7 people to eat 4 pizzas, how long would it take for 9 people to eat 7 pizzas (in minutes)?

- A) 49 B) 56 C) 63 D) 81 E) NOTA

29. A region R is bound by $|x| + |y| = 6$. What is the area of region R ?

- A) 18 B) 36 C) 72 D) 144 E) NOTA

30. Consider the number $0.12345678910111213\dots$, where numbers are written in numerical order after the decimal point. What is the 100th digit after the decimal.

- A) 2 B) 3 C) 4 D) 5 E) NOTA