

Wando MAO Math Meet
Spring 2010
Algebra 2 Team Test with Solutions

1. Find the values assigned to A, B, C and D below. Then return the product of the values.

$$A = \frac{1}{64^{\frac{-5}{6}}}$$

$$B = \frac{x^3 - 1}{(2x - 2)(x^2 + x + 1)}$$

C = $\lceil -\pi \rceil$ where $\lceil x \rceil$ represents the greatest integer function of x

$$D = \sum_{n=1}^{\infty} \frac{1}{32} \left(\frac{1}{2}\right)^{n-1}$$

2. Kate was practicing her running for cross country. She ran from her house to her friend's house at a constant 6 miles per hour. When she returned by the same route, she was tired and ran at a constant rate of only 4 miles per hour. What was her average speed?

3. Let A be equal to i^{22}










Let B be equal to $\frac{3+i}{2-i}$

Let C be equal to $-i\sqrt{-144}$

Let D be equal to $(4+i)^2$

Find A + B + C + D and write in simplified form

4. Given the values equated with each set of flags below, find the total of 3 Canadas.

			= 9
			= 13
			= 20

5. Find the area of the triangle defined by the solution to the system of inequalities:

$$\begin{cases} x - y \leq 2 \\ x + 2y \geq 8 \\ y \leq 4 \end{cases}$$

6. Given that $f(x) = \frac{2x}{x+1}$ and $g(x) = \sqrt[3]{x+4}$ find the following:

$$A = (f \circ g)(-12)$$

$$B = f^{-1} + g(0)$$

$$C = (f \circ f \circ f)(1)$$

$$\text{Find } B[(A - C)\sqrt[3]{2}]$$

7. The recession has put a crimp in your social life because your parents are not giving you the allowance you used to receive. As a result, you decided to break open the piggy bank you have been using to save half dollars, quarters, and nickels. When you examine your stash, you are surprised to discover you have exactly the same number of half dollars, quarters, and nickels, and a total of \$16.00. How many of each coin do you have?

8.

Let A be equal to $\sqrt{2 + \sqrt{2 + \sqrt{2 + \sqrt{2 + \dots}}}}$

Let B be equal to $\sqrt{2 - \sqrt{2 - \sqrt{2 - \sqrt{2 - \dots}}}}$

Find $2A + 3B$

9. If $f(x) = x^2 + 6x + 7$, the coordinates of the vertex are (h, k) and the roots are A and B .

Find $\frac{h \cdot k}{A + B}$

10. Work as a team to solve the following puzzle:

- If all matrices have an inverse, cross out all the I's but if not, cross out all of the E's in the message below.
- If the discriminant of $4x^2 - 4x + 1$ is negative, cross out all of the S's below, but if not, cross out all F's.
- If $(x + 1)$ is a factor of $(x^3 - 1)$, cross out all C's, but if not, cross out all K's.
- If $\log_{\pi} 0 = 1$, cross out all L's below. If not, cross out all Y's.

IFSITEALYMOFSETLUNECKYHEY?

What message remains?

11. Find A/B given the following information:

A = the remainder when $3x^5 - 8x^4 - 14x^3 + 6x - 50$ is divided by $(x - 4)$

B = the value necessary in the following number to make it divisible by 6

134B692B

12. Consider the following numbers:

$-5, 0, 2, \frac{-1}{2}, -3, \frac{7}{8}, 14, \frac{-8}{3}, 2.57, 7\frac{1}{2}$

Let A be equal to the product of the natural numbers

Let B be equal to the sum of the whole numbers










Of the ten numbers listed, let C be equal to how many of them are rational

Let D be equal to the sum of the integers

Find $\frac{AC}{BD}$

Solutions

1. -4 (A=32, B=1/2, C=-4, D=1/16)
2. 4.8 miles per hour
3. $27+9i$ OR $9(3+i)$
4. 3
5. 6
6. 6 (A=4, B= $\sqrt[3]{4}$, C=1)
7. 20 of each
8. 7
9. -1
10. IS IT ALMOST LUNCH?
11. 25.5 (A=102 and B = 4)
12. $\frac{35}{16}$

			= 9
			= 13
			= 20