

TIMBERWOLF INVITATIONAL**JANUARY 25, 2003****ALGEBRA II TEAM QUESTION #1**

Simplify: $\frac{6x^2 - 5x - 21}{2x^2 + 5x + 3} \div \frac{12x^2 - x - 63}{12x^2 + 35x + 18} \cdot \frac{5x^2 + 9x - 2}{15x^2 + 7x - 2}$

TIMBERWOLF INVITATIONAL**JANUARY 25, 2003****ALGEBRA II TEAM QUESTION #2**

$$A = 135792468^2 - 135792462^2$$

B = The number of diagonals in a 299-sided convex polygon.

$$C = 0! + 1^0 + 2187^{1/7}$$

Find A + B + C

TIMBERWOLF INVITATIONAL**JANUARY 25, 2003****ALGEBRA II TEAM QUESTION #3**

On Friday, May 27th, 2002, the New York Yankees defeated the Minnesota Twins 13-12 in the bottom of the 14th inning on a Jason Giambi grand slam home run, no lie. Now the question. Let's say Giambi hit the ball 5 feet above the ground (at a point (0,5)), and the highest point the ball reached was a towering 155 feet high at a point 300 feet from where the ball was hit (at vertex (300,155)). Let A= The total length of the home run. Let B= The length by which it cleared the 20 foot wall, 385 feet from where it was hit. Give A+B to the nearest whole number.

TIMBERWOLF INVITATIONAL**JANUARY 25, 2003****ALGEBRA II TEAM QUESTION #4**

I. Simplify $3\sqrt{125} - 2\sqrt{80} + \sqrt{405}$ to the form $a\sqrt{b}$

II. Multiply $(\sqrt{12} - \sqrt{6})(\sqrt{3} + \sqrt{27})$ to the form $c + d\sqrt{e}$.

III. Rationalize $\frac{4}{\sqrt{7} + \sqrt{3}}$ to the form $\sqrt{f} - \sqrt{g}$

Find a + b + c + d + e + f + g

TIMBERWOLF INVITATIONAL
ALGEBRA II TEAM QUESTION #5

JANUARY 25, 2003

Given: $A = (1 - i)^{11} + (1 + i)^{13}$

$$B = \frac{87 + 29i}{(5 + 2i)^2}$$

$$C = |-5 + 12i|$$

$$D = (11 + 7i)(-13i + 8)$$

Find: $A + 29B + C + D$

TIMBERWOLF INVITATIONAL
ALGEBRA II TEAM QUESTION #6

JANUARY 25, 2003

$$\frac{-3x}{2x^2 - 5x + 3} = \frac{A}{2x - 3} + \frac{B}{x - 1}$$

Find: $(A + B)$

TIMBERWOLF INVITATIONAL
ALGEBRA II TEAM QUESTION #7

JANUARY 25, 2003

Given there are 1800 students at Lawton Chiles High School, 492 of which are sophomores, 392 of which are juniors, and 140 of which are members of Mu Alpha Theta. Also, one-twelfth of the sophomores are in Mu Alpha Theta, and 50 Mu Alpha Theta members are neither juniors nor sophomores. (Assume that all students are members of exactly one class. For example, you cannot be both a freshman and a sophomore.)

- Find the total number of freshman and seniors at Lawton Chiles High School.
- The percentage of juniors in Mu Alpha Theta.
- The percent of those not juniors, not sophomores, and not members of Mu Alpha Theta to the nearest tenth.
- The fraction of juniors at Lawton Chiles High School.

Find $A + C + BD$

TIMBERWOLF INVITATIONAL**JANUARY 25, 2003****ALGEBRA II TEAM QUESTION #8**

Given an arithmetic sequence where the sum of the 1st thru 20th terms inclusive is 990 and the 10th term is 46, find each of the following:

A= the first term

B= the common difference

C= the sum of the 12th and 13th terms

D= the 6th term

Now evaluate: A + B + C + D

TIMBERWOLF INVITATIONAL**JANUARY 25, 2003****ALGEBRA II TEAM QUESTION #9**

Give the polynomial factors of the following quotient after simplifying:

$$\frac{-21x^3 - 83xy^2 + 121x^2y + 15y^3}{3x - y}$$

TIMBERWOLF INVITATIONAL**JANUARY 25, 2003****ALGEBRA II TEAM QUESTION #10**

A= the area of the conic $2x^2 + 2y^2 + 8x + 12y = 10$

B= the perpendicular distance between the focus and vertex of
 $x = (1/3)y^2 + 5y - 9$

C= the number of letters in the type of conic section defined by
 $13x^2 - 5y - 26x + 75y + 12 = 0$.

(Example: $y = 3x - 1$ defines a "line", which has 4 letters.)

Evaluate: A + BC

TIMBERWOLF INVITATIONAL**JANUARY 25, 2003****ALGEBRA II TEAM QUESTION #11**

Give the area of the region enclosed by the following inequalities:

$$\begin{aligned} 3x + 4y &\geq 12 \\ 3x - 4y &\leq 12 \\ y &\leq 3 \end{aligned}$$

TIMBERWOLF INVITATIONAL**JANUARY 25, 2003****ALGEBRA II TEAM QUESTION #12**

Given $h(x) = 3x - 2$, $f(x) = x^2 - 2x + 1$, and $g(x) = 2x - 1$, solve the following:

$$A = g(f(h(1/2)))$$

$$B = g(g(g(g(g(7))))))$$

$$C = h^{-1}(-10)$$

Find A + B + C

TIMBERWOLF INVITATIONAL**JANUARY 25, 2003****ALGEBRA II TEAM QUESTION #13**

Solution A contains a 100 liter solution that is 73% salt, and Solution B contains another 100 liter mixture with only 52% salt. The only other ingredient in both solutions is water. Bryan wants a 100-liter solution containing 69% salt. How many liters of the solution A does he need? Round to the nearest tenth of a liter.

TIMBERWOLF INVITATIONAL**JANUARY 25, 2003****ALGEBRA II TEAM QUESTION #14**

Assume $\log_5 11 = A$ and $\log_{13} 5 = B$. Give $\log_{169} 121 - \log_{125} 1331$ in terms of A and B.

TIMBERWOLF INVITATIONAL**JANUARY 25, 2003****ALGEBRA II TEAM QUESTION #15**

Mr. Friedlander's pool collapsed last week, and he has just installed a new one. It is a round pool, 18' in diameter and 5' high. He intends to fill the pool using a 100' long garden hose that is 1" in diameter. The hose releases its entire volume of water in 15 seconds. Exactly how long (in seconds) will it take to fill the pool? (Note: the hose is placed above the height of the pool, and no water is splashed out of the pool during the filling. The hose begins releasing water at its given rate.)