

17
TEAM QUESTION 1 PRE-CALCULUS PLANT CITY, Feb. 22, 1992

$$\text{If } A = \begin{bmatrix} 3 & -2 \\ 1 & 4 \end{bmatrix} \text{ and } B = \begin{bmatrix} 5 & 1 \\ -2 & 3 \end{bmatrix}$$

find $AB - BA$.

TEAM QUESTION 2 PRE-CALCULUS PLANT CITY, Feb. 22, 1992

Simplify:

$$\text{Arctan} \left[\frac{\cos 27^\circ \sin 153^\circ + \cos 333^\circ \sin 27^\circ}{\sin 50^\circ \cos 4^\circ + \sin 4^\circ \cos 50^\circ} \right]$$

TEAM QUESTION 3 PRE-CALCULUS PLANT CITY, Feb. 22, 1992

$$\tan^2 \theta + 1 = \csc^2 \theta$$

Solve for θ over the set of Real numbers.

TEAM QUESTION 4 PRE-CALCULUS PLANT CITY, Feb. 22, 1992

P is a point in Quadrant III which is six units from the line $5x - 12y = 3$. Find the coordinates of P if the value of x is three times the value of y.

TEAM QUESTION 5 PRE-CALCULUS PLANT CITY, Feb. 22, 1992

The corners of a 4-inch square are to be cut off so as to form a regular octagon. Find the total number of square inches to be cut away.

TEAM QUESTION 6 PRE-CALCULUS PLANT CITY, Feb. 22, 1992

Find the distance between the points $(4, 17^\circ)$ and $(5, 137^\circ)$.

TEAM QUESTION 7

PRE-CALCULUS

PLANT CITY, Feb. 22, 1992

If ...

$$A = \text{length of a latus rectum of } \frac{x^2}{64} + \frac{y^2}{4} = 1$$

$$B = x + y \quad \text{where } (x \text{ cis } y) = (5 \text{ cis } 20)(3 \text{ cis } 25)$$

$$C = \begin{vmatrix} 4 & 1 & -1 \\ 3 & 1 & 2 \\ 5 & -1 & 2 \end{vmatrix}$$

$$\text{Find: } \frac{B!}{(2C + A)!}$$

TEAM QUESTION 8

PRE-CALCULUS

PLANT CITY, Feb. 22, 1992

Simplify:

$$\left[\begin{vmatrix} 2 & 2 \\ 1 & \sqrt{3} \end{vmatrix} \right]^4$$

TEAM QUESTION 9

PRE-CALCULUS

PLANT CITY, Feb. 22, 1992

Express $\sqrt{7 + 4\sqrt{3}}$ + $\sqrt{7 - 4\sqrt{3}}$ as a single integer.

TEAM QUESTION 10

PRE-CALCULUS

PLANT CITY, Feb. 22, 1992

There are 25 people in the Plant City Chapter of Mu Alpha Theta. 7 are seniors, 8 are juniors, and 10 are sophomores. If the president, vice-president, and secretary are chosen at random in that order, what is the probability of a senior becoming president, a junior becoming vice-president, and a sophomore becoming secretary?

TEAM QUESTION 11

PRE-CALCULUS

PLANT CITY, Feb. 22, 1992

Find the 4 fourth roots of -1 ; give answers in cis form.

TEAM QUESTION 12

PRE-CALCULUS

PLANT CITY, Feb. 22, 1992

Find the sum of the first 20 triangular numbers.

TEAM QUESTION 14

PRE-CALCULUS

PLANT CITY, Feb. 22, 1992

A fly is on the edge of the top of a right circular cylinder. It circles the tube exactly 5 times ending up directly under his starting position. If the radius is $\frac{1}{2}$ and the height is 12π find the shortest distance the fly could have walked.

TEAM QUESTION 13

PRE-CALCULUS

PLANT CITY, Feb. 22, 1992

$$z = 4 \operatorname{cis} 30^\circ \quad x = 2 \operatorname{cis} 60^\circ$$

$$A = \bar{z}$$

$$B = |z|$$

$$C = \bar{x}$$

$$D = |x|$$

Find $A + (B + C + D)i$

TEAM QUESTION 15

PRE-CALCULUS

PLANT CITY, Feb. 22, 1992

Solve for x .

$$7^{x+1} = 5^x$$