PRE- CALCULUS TEAM MU ALPHA THETA February

1. Let $A = \sin 45^\circ + \cos 60^\circ$

$B = e^{\ln \sin 90^\circ}$

C = the positive solution of $2x^2 + 5x - 3 = 0$

FIND the exact value of $A - B + C$

2. Solve : $x^2 - 6x + 4 < 0$

3. Let M = be the hypotenuse of a right triangle with sides 23 and 31

N = the side opposite a 120° angle of a triangle the adjacent sides to the 120° angle are 20 and 24

P = area of a triangle with sides 3, 7, and 8

EVALUATE : $M^2 - N^2 + P^2$

4. Find $0^\circ \leq a < 360^\circ$ if 0 and $\frac{1}{2}$ are the two roots of

$$x^2 - (\sin a)x - \frac{\cos^2 a}{4} = 0$$

5. A is the center of $x^2 - y^2 + 6x + 8y - 11 = 0$

B is the y-intercept of $6x + y = 8$

FIND the perimeter of a triangle with vertices at the orign, A, and B.

6. Solve for x and y : $\ln e^{x} + \ln e^{y+3} = 3$

$2\ln e^{x} + \ln e^{y^2} = 8$

7. Let a and b are relatively prime

L1 is $3x + 7y = 21$ and L2 is $ax + by = G$

if L1 $\perp$ L2 then find the value of $3a - 5b$

8. A represents the vector from (2, -1) to (6,4)
B represents the vector from the orgin to (4,3)

If θ is the angle between vector A and vector B , then find the value of θ to the nearest tenth of a degree.

9. Find the equation of the parabola which has its vertex at (4, -2) and passes through an endpoint of the latus at (-2, 1).
(Write the equation in the form $ax^2 + bx + cy + d = 0$)

10. SIMPLIFY : $\dfrac{\sin^4 x - \cos^4 x + 1}{\sin 2x}$ to an expression in one function.

11. A is the y-intercept of $7x - 5y = 20$

B is the x-intercept of $5x + 4y = 30$

Write the equation of the perpendicular bisector of the segment which connects the points A and B in $ax + by = c$ (standard form)

12. Simplify : $(1 - i)^6$

13. $f(x) = f(x - 2) + \dfrac{ax}{2} + 5$ and $f(4) = 8$

Solve for a if $f(8) = 32$

14. $A = \left(1 - \frac{1}{2}\right)\left(1 - \frac{1}{3}\right)\left(1 - \frac{1}{4}\right) \ldots \left(1 - \frac{1}{44}\right)$

B = the sum of the coefficients of $(x^2 + 3y)^3$

EVALUATE : $\dfrac{11(A)(B)}{4}$

15. Find the value(s) of k so that roots of $x^2 + 2kx - 5k = 0$ are not real.