Test: THETA

Points: 15 points

Name: _____

Date: _____

NOTA= None of these answers is correct.

Question 1 of 15 1 pt

Consider the following statement: “If you get this question correct, then you will feel good about yourself.” What is the inverse of the contrapositive of the converse of the contrapositive of the inverse of the converse of this statement?

- **A)** If you feel good about yourself, then you will get this question correct.
- **B)** If you do not get this question correct, then you will not feel good about yourself.
- **C)** If you do not feel good about yourself, then you will not get this question correct.
- **D)** If you get this question correct, then you will feel good about yourself.
- **E)** NOTA

Question 2 of 15 1 pt

Suppose that $Q(x)$ is an even parabolic function whose leading coefficient is 1 and that $Q(2)$ = -6.

What is the y-intercept of $Q(x)$?

- **A)** -10
- **B)** -2
- **C)** 2
- **D)** 10
- **E)** NOTA

Question 3 of 15 1 pt

In terms of n, solve for x: $n = \sqrt{x - \sqrt{x - \sqrt{x - \sqrt{x - \cdots}}}}$

A) $n^2 + n$

B) $n^2 + \sqrt{n}$

C) $n^2 - n$

D) $n^2 - \sqrt{n}$

E) NOTA

Question 4 of 15

1 pt

Sector A which is part of Circle A has an area of 12 and a central angle of $\frac{\pi}{5}$. Sector B which is part of Circle B has an area of 14 and a central angle of $\frac{7\pi}{11}$. Suppose the radii of Circle A and Circle B are used to construct Sphere A and Sphere B respectively. Find the ratio between the volume of Sphere B and Sphere A.

A) $\frac{11\sqrt{330}}{900}$

B) $\frac{30\sqrt{330}}{121}$

C) $\frac{15\sqrt{165}}{121}$

D) $\frac{11\sqrt{165}}{225}$

E) NOTA

Question 5 of 15

1 pt

Find the area of a regular hexagon that is inscribed in a circle whose area is 64π.

A) $64\sqrt{3}$

B) $72\sqrt{3}$

C) $96\sqrt{3}$

D) $108\sqrt{3}$

E) NOTA

Question 6 of 15 1 pt

Given polynomial $P(x)$ find the product of the roots taken two at a time.

$$P(x) = x^3 - 4x^2 + 10x - 16$$

- **A)** 40
- **B)** 64
- **C)** 160
- **D)** 256
- **E)** NOTA

Question 7 of 15 1 pt

Which of the following are true about proving similar/congruent triangles?

I. If two angles of a triangle are congruent then the two triangles are similar.

II. If two pairs of corresponding sides are in proportion and there exists an equal angle that both the triangles share then the two triangles are similar.

III. If three pairs of corresponding sides are in proportion then the two triangles are similar.

- **A)** I only
- **B)** II and III
- **C)** I and III
- **D)** All of the above
- **E)** NOTA

Question 8 of 15

1 pt

The center of the following conic section can be written in the form (h,k) find h + k.

$2x^2 - y^2 - 16x + 10y - 41 = 0$

- **A)** 9
- **B)** 1
- **C)** -1
- **D)** -9
- **E)** NOTA

Question 9 of 15

1 pt

Find the units digit of the sum of the elements of: $\begin{bmatrix} 6 & 4 \\ -2 & -1 \end{bmatrix} + \begin{bmatrix} 7 & 4 \\ 2 & -5 \end{bmatrix} - \begin{bmatrix} 5 & 9 \\ 3 & -8 \end{bmatrix}$

- **A)** 4
- **B)** 6
- **C)** 8
- **D)** 9
- **E)** NOTA

Question 10 of 15

1 pt

What is the units digit of $2^{61203478} + 3^{71239563}$?

- **A)** 1
- **B)** 5
- **C)** 7
- **D)** 9
- **E)** NOTA

Question 11 of 15

1 pt

To construct an orthocenter of a triangle which of the following is used?

- **A)** Angle Bisectors
- **B)** Perpendicular Bisectors
- **C)** Altitudes
- **D)** Medians
- **E)** NOTA

Question 12 of 15

1 pt

Solve the expression:

$$3 + (5 - 2)^2 - 3 \times 2 + 6 - 3 \div (1 + 2) - 1$$

- **A)** 2
- **B)** 6
- **C)** 8
- **D)** 12
- **E)** NOTA

Question 13 of 15

1 pt

Solve for x if the infinite sum $\log_3(x) + \log_9(x) + \log_{81}(x) + \log_{6561}(x) + \ldots = 18.$

- **A)** 3^6
- **B)** 3^9
- **C)** 3^{12}
- **D)** 3^{18}
- **E)** NOTA

Question 14 of 15

1 pt

Can you crack this code? Include the exact punctuation when you type your answer in the blank:

Arire tbaan tvir lbh hc, arire tbaan yrg lbh qbja, arire tbaan eha nebhaq naq qrfreg lbh.

Question 15 of 15

1 pt

Dear puzzler, here is a list of things: integrals, unlimited breadsticks, scented dryer sheets, praseodymium, a lost pet colony on the moon, a flowing purple cape.

Using all of these unique tools, can you crack this code? Include the exact punctuation when you type your answer in the blank:

M pc lekmgql, pfs sgf’n apbb ce Lymkbex.
