**#1 Precalculus – Hustle**

**MAϴ National Convention 2012**

What is the sum of the amplitude, period, and phase shift of the following sine function?

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#2 Precalculus – Hustle**

**MAϴ National Convention 2012**

Evaluate the following determinant:

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#3 Precalculus – Hustle**

**MAϴ National Convention 2012**

***M*** = the domain of f(x) =

***A*** = the range of g(x) =

**ϴ** = the range of h(x) =

Give the following set in interval notation:

.

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#4 Precalculus – Hustle**

**MAϴ National Convention 2012**

Leland Jr. will select two guys and two girls to form a committee. If he can select from four different guys and four different girls, how many possible committees are there?

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#5 Precalculus – Hustle**

**MAϴ National Convention 2012**

The three cube roots of are ***a***, ***b***, and ***c*** (where ***.*** Evaluate

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#6 Precalculus – Hustle**

**MAϴ National Convention 2012**

Simplify and give the exact value of

.

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#7 Precalculus – Hustle**

**MAϴ National Convention 2012**

Over the interval how many unique solutions exist to the following equation: ?

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#8 Precalculus – Hustle**

**MAϴ National Convention 2012**

What is the value of the following limit?

.

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#9 Precalculus – Hustle**

**MAϴ National Convention 2012**

What is the period of the function ?

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#10 Precalculus – Hustle**

**MAϴ National Convention 2012**

Expand and simplify

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#11 Precalculus – Hustle**

**MAϴ National Convention 2012**

Find the length of the altitude to side *b* in ∆ABC given: side side and angle

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#12 Precalculus – Hustle**

**MAϴ National Convention 2012**

What type of conic does the following polar equation best represent: ?

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#13 Precalculus – Hustle**

**MAϴ National Convention 2012**

Evaluate

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#14 Precalculus – Hustle**

**MAϴ National Convention 2012**

How many real solutions exist to the equation:

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#15 Precalculus – Hustle**

**MAϴ National Convention 2012**

Evaluate

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#16 Precalculus – Hustle**

**MAϴ National Convention 2012**

Solve for *x* if .

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#17 Precalculus – Hustle**

**MAϴ National Convention 2012**

If and evaluate in terms of *x*.

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#18 Precalculus – Hustle**

**MAϴ National Convention 2012**

Find the sum of all real values of *x* that satisfy the following equation:

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#19Precalculus – Hustle**

**MAϴ National Convention 2012**

What is the slope of the line that is defined parametrically as:

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#20 Precalculus – Hustle**

**MAϴ National Convention 2012**

Evaluate

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#21 Precalculus – Hustle**

**MAϴ National Convention 2012**

Solve for non-zero vector given that it satisfies the following equation: . Give your answer in the format

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#22 Precalculus – Hustle**

**MAϴ National Convention 2012**

What is the value of the constant term in the expansion of

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#23 Precalculus – Hustle**

**MAϴ National Convention 2012**

Evaluate ***A + B*** given: .

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#24 Precalculus – Hustle**

**MAϴ National Convention 2012**

Michelle is running around a giant circle of radius 10 meters. If her angular speed is radians per second, what is her linear speed in meters/sec? (Exclude unit measurements in your answer)

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**

**#25 Precalculus – Hustle**

**MAϴ National Convention 2012**

Larry and Sergey drop a super ball off a tower 80 feet high. Once it hits the ground, the ball bounces up of its descending height, falls back to the ground, and continues bouncing up to the previous bounce’s height forever. Rounded to the nearest foot, what will be the total vertical distance the ball travels over the course of infinity? (Exclude unit measurements in your answer)

**Answer : \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Round 1 2 3 4 5**