Hustle
Potpourri
Mu Alpha Theta 2006

 # 1 Find the sum of the roots of the function
$f(x) = x^2 - 8x + 16$

Answer:

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Mu Alpha Theta 2006

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Mu Alpha Theta 2006

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$f(x) = x^2 - 8x + 16$

Answer:

 # 2 Determine the eccentricity of the following conic section.

$$5x^2 - 4y^2 - 30x - 8y + 21 = 0$$

Answer:

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Potpourri
Mu Alpha Theta 2006

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Hustle
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Hustle
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$$5x^2 - 4y^2 - 30x - 8y + 21 = 0$$

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 3 Evaluate: $\int \ln(x)dx$.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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Answer:

Hustle
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Mu Alpha Theta 2006

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Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 4 What is the least number of non-overlapping regions a regular hexagon can be divided into by four distinct diagonals?

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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Answer:

Hustle
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Mu Alpha Theta 2006

 # 5 When five children attempt to divide a pile of fewer than 50 marbles evenly amongst themselves, there are 3 marbles left over. One child leaves, and the remaining children try to divide up the marbles again. This time there is one left over. Another child leaves, and finally the pile of marbles can be divided evenly amongst the three children. How many marbles does each child now have?

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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Answer:

Hustle
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Mu Alpha Theta 2006

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Answer:

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Mu Alpha Theta 2006

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Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 6 Find the slope of the line normal to the curve $f(x) = x^{\frac{1}{2}}$ at $x = \frac{1}{9}$.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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Answer:

Hustle
Potpourri
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Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 7 What is the highest degree polynomial that is guaranteed to be able to be solved using a formula whose parameters consist of the coefficients of the polynomial in question?

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 7 What is the highest degree polynomial that is guaranteed to be able to be solved using a formula whose parameters consist of the coefficients of the polynomial in question?

Answer:

 # 8 The logical sentence $\neg(A \wedge B) \equiv \neg A \vee \neg B$ is an example of this term, which describes a logical statement in which the conclusion is equivalent to the premise and whose truth table contains only 'T'.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 8 The logical sentence $\neg(A \wedge B) \equiv \neg A \vee \neg B$ is an example of this term, which describes a logical statement in which the conclusion is equivalent to the premise and whose truth table contains only 'T'.

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Hustle
Potpourri
Mu Alpha Theta 2006

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Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 8 The logical sentence $\neg(A \wedge B) \equiv \neg A \vee \neg B$ is an example of this term, which describes a logical statement in which the conclusion is equivalent to the premise and whose truth table contains only 'T'.

Answer:

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 # 9 How many distinct 5-card poker hands contain exactly one ace and exactly three face cards?

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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Answer:

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Hustle
Potpourri
Mu Alpha Theta 2006

 # 10 Evaluate: $\lim_{n\to 0} \dfrac{1+n-\sqrt{n^2+1}}{\cos(n)+\sin(n)-1}$

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 10 Evaluate: $\lim_{n\to 0} \dfrac{1+n-\sqrt{n^2+1}}{\cos(n)+\sin(n)-1}$

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 10 Evaluate: $\lim_{n\to 0} \dfrac{1+n-\sqrt{n^2+1}}{\cos(n)+\sin(n)-1}$

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 10 Evaluate: $\lim_{n\to 0} \dfrac{1+n-\sqrt{n^2+1}}{\cos(n)+\sin(n)-1}$

Answer:

 # 11 The first three square pyramidal numbers are 1, 5, and 14. Find the fourth square pyramidal number.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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Hustle
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Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 11 The first three square pyramidal numbers are 1, 5, and 14. Find the fourth square pyramidal number.

Answer:

 # 12

A sine curve has amplitude 4 and frequency $\frac{1}{5}$.

If the amplitude is increased to 7, then what is the new period?

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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If the amplitude is increased to 7, then what is the new period?

Answer:

Hustle
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Mu Alpha Theta 2006

 # 12 A sine curve has amplitude 4 and frequency $\frac{1}{5}$. If the amplitude is increased to 7, then what is the new period?

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 12 A sine curve has amplitude 4 and frequency $\frac{1}{5}$. If the amplitude is increased to 7, then what is the new period?

Answer:

 # 13

The measures of the interior angles of a triangle form a geometric sequence of ratio 2. Find the measure of the second largest angle of the triangle as a fraction in lowest terms.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 13

The measures of the interior angles of a triangle form a geometric sequence of ratio 2. Find the measure of the second largest angle of the triangle as a fraction in lowest terms.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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The measures of the interior angles of a triangle form a geometric sequence of ratio 2. Find the measure of the second largest angle of the triangle as a fraction in lowest terms.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 13

The measures of the interior angles of a triangle form a geometric sequence of ratio 2. Find the measure of the second largest angle of the triangle as a fraction in lowest terms.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

#14 How many times do the functions $f(x) = x^2$ and $g(x) = 2^x$ intersect?

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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Answer:

Hustle
Potpourri
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Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

#14 How many times do the functions $f(x) = x^2$ and $g(x) = 2^x$ intersect?

Answer:

 # 15

Let $f(x) = 2 - x$, and let $g(x) = \lim_{n \to \infty} x^n$.

Find the area bounded above by $f(x)$ and below by $g(x)$ over the interval [-½, ½].

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 15

Let $f(x) = 2 - x$, and let $g(x) = \lim_{n \to \infty} x^n$.

Find the area bounded above by $f(x)$ and below by $g(x)$ over the interval [-½, ½].

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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Let $f(x) = 2 - x$, and let $g(x) = \lim_{n \to \infty} x^n$.

Find the area bounded above by $f(x)$ and below by $g(x)$ over the interval [-½, ½].

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 15

Let $f(x) = 2 - x$, and let $g(x) = \lim_{n \to \infty} x^n$.

Find the area bounded above by $f(x)$ and below by $g(x)$ over the interval [-½, ½].

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

#16 Factor completely:
$6x^2 + zy - 3xy - 2xz$.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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$6x^2 + zy - 3xy - 2xz$.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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$6x^2 + zy - 3xy - 2xz$

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

#16 Factor completely:
$6x^2 + zy - 3xy - 2xz$

Answer:

 # 17

A 5^{th} degree polynomial has the following roots, including double roots: -2, -1, -1, 3, 6. How many times will the graph of this polynomial cross over the x-axis?

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 17

A 5^{th} degree polynomial has the following roots, including double roots: -2, -1, -1, 3, 6. How many times will the graph of this polynomial cross over the x-axis?

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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A 5^{th} degree polynomial has the following roots, including double roots: -2, -1, -1, 3, 6. How many times will the graph of this polynomial cross over the x-axis?

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 17

A 5^{th} degree polynomial has the following roots, including double roots: -2, -1, -1, 3, 6. How many times will the graph of this polynomial cross over the x-axis?

Answer:

 # 18

The two bases of a non-right circular cylinder reside in parallel planes, but their centers are not directly above one another. The radius of each base has measure 3, the distance between the planes containing the two bases is 4, and the distance between the centers of the two bases is 5. Find the volume of the cylinder.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 18

The two bases of a non-right circular cylinder reside in parallel planes, but their centers are not directly above one another. The radius of each base has measure 3, the distance between the planes containing the two bases is 4, and the distance between the centers of the two bases is 5. Find the volume of the cylinder.

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Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 19

How many petals are in the graph of the rose $r = 3\sin(6\theta)$?

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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Potpourri
Mu Alpha Theta 2006

 # 19

How many petals are in the graph of the rose $r = 3\sin(6\theta)$?

Answer:

 # 20

Determine the number of distinct regular polyhedrons with triangular faces and edges length 1.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 20

Determine the number of distinct regular polyhedrons with triangular faces and edges length 1.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 20

Determine the number of distinct regular polyhedrons with triangular faces and edges length 1.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 20

Determine the number of distinct regular polyhedrons with triangular faces and edges length 1.

Answer:

 # 21

The sides of a 6-sided die are numbered 1, 1, 2, 3, 5, and 8. Determine the expected number of times a 1 will be rolled if the die is thrown 5 times.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 21

The sides of a 6-sided die are numbered 1, 1, 2, 3, 5, and 8. Determine the expected number of times a 1 will be rolled if the die is thrown 5 times.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 21

The sides of a 6-sided die are numbered 1, 1, 2, 3, 5, and 8. Determine the expected number of times a 1 will be rolled if the die is thrown 5 times.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 21

The sides of a 6-sided die are numbered 1, 1, 2, 3, 5, and 8. Determine the expected number of times a 1 will be rolled if the die is thrown 5 times.

Answer:

 # 22
Compute the harmonic mean of the geometric mean and the arithmetic mean of 1 and 9.

Answer:

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 # 22
Compute the harmonic mean of the geometric mean and the arithmetic mean of 1 and 9.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 22
Compute the harmonic mean of the geometric mean and the arithmetic mean of 1 and 9.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 23 What is the prime factorization of 1001?

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 23 What is the prime factorization of 1001?

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 23 What is the prime factorization of 1001?

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 23 What is the prime factorization of 1001?

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 24 Evaluate $\lim_{x \to 0^+} \sin(1/x)$.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 24 Evaluate $\lim_{x \to 0^+} \sin(1/x)$.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 24 Evaluate $\lim_{x \to 0^+} \sin(1/x)$.

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 24 Evaluate $\lim_{x \to 0^+} \sin(1/x)$.

Answer:

 # 25 What is ½ mod 11?

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 25 What is ½ mod 11?

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

 # 25 What is ½ mod 11?

Answer:

Hustle
Potpourri
Mu Alpha Theta 2006

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Answer: