Kimo paddles upstream for 8 hours. If his rate of paddling is twice the rate of the current, at what time will he have to start heading downstream in order to reach his starting point at 6pm?
A math professor, basketball coach, and their student went to Burger Queen for lunch. The math professor paid $14.25 for 8 hamburgers, 5 orders of fries, and 2 cokes. The basketball coach paid $8.51 for 5 hamburgers, 3 orders of fries, and 1 coke. What did the student pay for 1 hamburger, 1 order of fries, and 1 coke?
Find all real solutions for $x$:

$$(x^2 + 2x - 24)^{x^3 - 9x^2 + 20x} = 1$$
A circle has both inscribed and circumscribed squares. The difference of their areas is 40 square units. What is the circumference of the circle?

Answer:
Chris and Pat work at Hawaiian Electric. One day, Chris said to Pat, “19/40 of my coworkers are female”. Pat replied “12/25 of my coworkers are female”. If Chris and Pat are of different genders and they are both correct, then how many workers are there at Hawaiian Electric?
An army of ants is marching across the kitchen floor. If they form columns with 10 ants in each column, then there are 6 ants left over. If they form columns of 7, 11, or 13 ants in each column, then there would be 2 ants left over. What is the smallest number of ants that could be in this army?

Answer: 

Graded By: ________________________     Checked By: ________________________
A can of macadamia nuts has a 3 inch diameter and 4 inch height. What is the maximum number of cans that will fit in a box that measures 24 inches long, 24 inches wide, and 4 inches high on the inside?

Answer: 

Graded By: _________________________  Checked By: _______________________
Triangle $ABC$ is an isosceles right triangle with legs $AC = BC = 1$. Triangle $ADC$ is an equilateral triangle with sides of length 1. If $E$ is the point of intersection of $AB$ and $CD$, what is the area of triangle $ADE$?
The mean score for those who passed the last test in Dr. Furuto’s class was 65, while the mean score for those who failed the test was 35. If the mean for the entire class was 53, what percentage of the class passed the test?

Answer: 

Graded By: ___________________________  Checked By: ___________________________
Find a four digit integer, $x$, such that $4x$ is another four-digit number whose digits are in the reverse order of the digits of $x$. 

Answer: 

Graded By: ___________________________  Checked By: ___________________________
Suppose that $0 \leq x \leq 2\pi$. Find all solutions to the equation
\[
\frac{\cos x}{\cos x + \sin x} + \frac{\sin x}{\cos x - \sin x} = \frac{\tan 2x + \cot 2x}{\sec 2x}
\]
How many integers with 4 different digits are there between 1,000 and 9,999 such that the absolute value of the difference between the first digit and the last digit is 2?
Round #7, Problem C: (10 points/15 minutes)

Name of School (Please Print):__________________________________________

(Please do not go below this line until directed to do so.)  All answers must be expressed exactly

Find the sum of the digits in the following product:

\[3,333,333,333 \times 3,333,333,333.\]

Answer:_________________________

Graded By:____________________  Checked By:________________________
A 3-4-5 right triangle is drawn so that the endpoints of the hypotenuse are (0,0) and (5,0). A square with area 1 is drawn so that its center is the vertex of the right triangle and its sides are parallel to the $x$ and $y$ axes. What is the area of the region where the triangle and square overlap?
Find the tens digit in the sum

\[(1!)^3 + (2!)^3 + (3!)^3 + (4!)^3 + \cdots + (100!)^3\]
If a man died 1 billion seconds after he was born, what age in years was printed on his death certificate?

Answer: ____________
The smallest of three numbers is log 1. Their mean is log 4. Their median is log 5. Find the largest number.