Hustle
Test #841
Algebra
Find the distance between \((-6, 4)\) and \((3, -2)\).

Answer: ________________________

Round 1 2 3 4 5

Answer: ________________________

Round 1 2 3 4 5
Write the range of $y = 2 - \sqrt{(x+4)(x-7)}$ in interval notation.

Answer: ______________________

Round 1 2 3 4 5

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Answer: ______________________

Round 1 2 3 4 5
Find \( h(9) \) if \( h(x) = f(g(x)) \), using \( f(x) = \sqrt{x+1} \) and \( g(x) = 1 + x^2 \).

Answer: ___________________

Round 1 2 3 4 5

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Answer: ___________________

Round 1 2 3 4 5
If $y$ varies directly as $t^2$ and inversely as $x^3$ and $r$, find $y$ when $x = 3, t = 4$, and $r = 8$ if $y = 1$ when $x = 2, t = 3$, and $r = 4$. Express your answer as a common fraction.

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<tr>
<th>Round</th>
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<th>2</th>
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Find all complex values of $x$ for which $f(x) = 0$ in the function given by

$$f(x) = \frac{x+1}{x-1} - \frac{x+2}{2x+1}.$$

Answer: 

Round 1 2 3 4 5

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Round 1 2 3 4 5

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$$f(x) = \frac{x+1}{x-1} - \frac{x+2}{2x+1}.$$

Answer: 

Round 1 2 3 4 5
What is the maximum area possible for a triangle the sum of whose base $b$ and height $h$ (which is measured from the triangle vertex opposite the base with length $b$) is 10?

Answer: ________________

Round 1 2 3 4 5

What is the maximum area possible for a triangle the sum of whose base $b$ and height $h$ (which is measured from the triangle vertex opposite the base with length $b$) is 10?

Answer: ________________

Round 1 2 3 4 5
Write the equations of all the vertical asymptotes of 
\[ y = \frac{x^3 - 2x^2 - 29x + 30}{x^3 - 19x + 30}. \]

Answer: ________________

Round 1 2 3 4 5

Write the equations of all the vertical asymptotes of 
\[ y = \frac{x^3 - 2x^2 - 29x + 30}{x^3 - 19x + 30}. \]

Answer: ________________

Round 1 2 3 4 5
Find the area of the ellipse generated by $x^2 + 4y^2 - 6x - 7 = 0$.

Answer: ____________________

Round 1 2 3 4 5

Find the area of the ellipse generated by $x^2 + 4y^2 - 6x - 7 = 0$.

Answer: ____________________

Round 1 2 3 4 5
Find the asymptote of the hyperbola $25x^2 - 16y^2 + 100x + 96y = 444$ that has positive slope. Write your answer in slope-intercept form.

Answer: ________________________

Round 1 2 3 4 5

Find the asymptote of the hyperbola $25x^2 - 16y^2 + 100x + 96y = 444$ that has positive slope. Write your answer in slope-intercept form.

Answer: ________________________

Round 1 2 3 4 5
Find the number of digits, when evaluated, in $2^{2013}$ given that $\log 2 \approx 0.3010$.

Answer: ________________

Round 1 2 3 4 5

Find the number of digits, when evaluated, in $2^{2013}$ given that $\log 2 \approx 0.3010$.

Answer: ________________

Round 1 2 3 4 5
Solve for $x$.

$$\frac{1}{3} \log_{20} (2x - 1) = \log_{20} 11 - 2 \log_{20} \sqrt[3]{2x - 1} + \log_{5} \left( \log_{7} 7 \right)$$

Answer: ________________________

Round 1 2 3 4 5

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$$\frac{1}{3} \log_{20} (2x - 1) = \log_{20} 11 - 2 \log_{20} \sqrt[3]{2x - 1} + \log_{5} \left( \log_{7} 7 \right)$$

Answer: ________________________

Round 1 2 3 4 5
Find the value of $x + y$ for \[
\begin{align*}
\frac{3}{x-2} + \frac{2}{y+1} &= 1 \\
\frac{4}{x-2} - \frac{1}{y+1} &= 5 \quad .
\end{align*}
\]

Answer: ________________

Round 1 2 3 4 5

---

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\frac{4}{x-2} - \frac{1}{y+1} &= 5 \quad .
\end{align*}
\]

Answer: ________________

Round 1 2 3 4 5
Find the product of the two numbers whose sum is 15 and whose positive difference is 27.

Answer: ________________

Round  1  2  3  4  5

Find the product of the two numbers whose sum is 15 and whose positive difference is 27.

Answer: ________________

Round  1  2  3  4  5
Two pumps working together can empty an oil tanker in 12 hours. If both pumps run for 9 hours and then one breaks down, it takes the remaining pump 3.75 hours to finish the job. How many hours would it take the slower pump working alone to empty a full tanker? Assume that each of the pumps work at constant rates.

Answer: _________________
Round 1 2 3 4 5

Answer: _________________
Round 1 2 3 4 5

Two pumps working together can empty an oil tanker in 12 hours. If both pumps run for 9 hours and then one breaks down, it takes the remaining pump 3.75 hours to finish the job. How many hours would it take the slower pump working alone to empty a full tanker? Assume that each of the pumps work at constant rates.

Answer: _________________
Round 1 2 3 4 5

Answer: _________________
Round 1 2 3 4 5
Find the point in the first quadrant that satisfies \( \begin{cases} 2x^2 + 3y^2 = 7 \\ x^2 - y^2 = 1 \end{cases} \). Express your answer as an ordered pair \((x, y)\).

Answer: ________________________

Round 1 2 3 4 5

Answer: ________________________

Round 1 2 3 4 5

Find the point in the first quadrant that satisfies \( \begin{cases} 2x^2 + 3y^2 = 7 \\ x^2 - y^2 = 1 \end{cases} \). Express your answer as an ordered pair \((x, y)\).

Answer: ________________________

Round 1 2 3 4 5
An archaeologist found some organic artifacts which contained 25% of their original carbon-14. If the half-life of carbon-14 is 5700 years, how old (in years) are these relics? Use the formula

\[ C = C_0 \left( 2^{t/5700} \right) \]

Answer: ________________

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<td>-5 0 2</td>
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Evaluate: 2 3 0

Evaluate: -5 0 2

Evaluate: -1 7 -3

Answer: ______________

Round 1 2 3 4 5

Answer: ______________

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Answer: ______________

Round 1 2 3 4 5

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Round 1 2 3 4 5
The determinant of a $2 \times 2$ matrix $A$ is 12. Find the determinant of $3A$.

Answer: ________________________

Round 1 2 3 4 5

The determinant of a $2 \times 2$ matrix $A$ is 12. Find the determinant of $3A$.

Answer: ________________________

Round 1 2 3 4 5
Find the conjugate of $z$ if $z = \frac{7-2i}{3+5i}$. Write your answer in $a+bi$ form, where $a$ and $b$ are real numbers.

Answer: ________________________

Round 1 2 3 4 5

Find the conjugate of $z$ if $z = \frac{7-2i}{3+5i}$. Write your answer in $a+bi$ form, where $a$ and $b$ are real numbers.

Answer: ________________________

Round 1 2 3 4 5
Evaluate $|8 - 6i|$, given that $i = \sqrt{-1}$.

Answer: ______________

Round 1 2 3 4 5

Evaluate $|8 - 6i|$, given that $i = \sqrt{-1}$.

Answer: ______________

Round 1 2 3 4 5
Find the remainder when 
$7x^5 - 5x^4 + 12x^3 - 17x^2 + 22x + 10$ is divided by 
$7x + 2$

Answer: ________________________

Round 1 2 3 4 5

Find the remainder when 
$7x^5 - 5x^4 + 12x^3 - 17x^2 + 22x + 10$ is divided by 
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Answer: ________________________

Round 1 2 3 4 5
Find the remaining two roots of 
\[3x^3 + 17x^2 + 16x + 4 = 0\] given that \(-\frac{2}{3}\) is a root.

Answer: ________________________

Round    1    2    3    4    5

Find the remaining two roots of 
\[3x^3 + 17x^2 + 16x + 4 = 0\] given that \(-\frac{2}{3}\) is a root.

Answer: ________________________

Round    1    2    3    4    5
Compute \( \sum_{k=1}^{6} (-1)^{k+1} (k+1)k \).

Answer: 

Round 1 2 3 4 5

---

Compute \( \sum_{k=1}^{6} (-1)^{k+1} (k+1)k \).

Answer: 

Round 1 2 3 4 5

---

Compute \( \sum_{k=1}^{6} (-1)^{k+1} (k+1)k \).

Answer: 

Round 1 2 3 4 5
Find the sum of all the odd integers between 100 and 500.

Answer: ________________________

Round  1  2  3  4  5

Find the sum of all the odd integers between 100 and 500.

Answer: ________________________

Round  1  2  3  4  5
Find the middle term in the expansion of \((2x - y)^4\), when the terms are written in decreasing powers of \(x\).

Answer: ________________________  Answer: ________________________

Round 1 2 3 4 5  Round 1 2 3 4 5