#0 Alpha Ciphering
MAΘ National Convention 2019

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#4 Alpha Ciphering
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The length of the minor arc (in inches) between the two 4-inch hands of a circular clock when it is 2:45 is $\frac{J\pi}{6}$. What is J?

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#7 Alpha Ciphering
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Find the coefficient of the 4th term in the binomial expansion of $(L-U)^N$, if the 3rd and 5th terms have the same coefficient.

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A CD spins at 4500 revolutions per minute. The linear velocity, in feet per second, of a point 2 inches from the center of the CD is $L\pi$. What is L?

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The sum of the solutions to $16x - (2x)^{\log_2 x} = 0$ is $\frac{L}{U}$, in simplest form. Find L + U.

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Let A be the following matrix: $\begin{pmatrix} 2 & -1 & 3 \\ 1 & -2 & 0 \\ 1 & 3 & 4 \end{pmatrix}$

Find the entry in the 2nd row/3rd column of A^{-1}.

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