\[
\frac{x^2 + 4x + 4}{x^3 - x^2 + 2x - 2} = \frac{A}{x - 1} + \frac{Bx + C}{x^2 + 2}
\]

Let \( D \) = the number of vertical asymptotes of: \( \frac{x^3 - 2x^2 + x - 2}{x^2 - 5x - 6} \)

Let \( E \) = the number of vertical asymptotes of: \( \frac{10x^3 - 15x^2 + 2x - 3}{18x^3 - 27x^2 + 8x - 12} \)

Let \( F \) = the number of vertical asymptotes of: \( \frac{45x^2 + 54x - 8}{60x^2 - 68x + 8} \)

**Find the value of** \( A + B + C + D + E + F \).

\[
\text{Let } A = \sin \left( \tan^{-1} \left( \frac{-3}{4} \right) + \tan^{-1} \left( \frac{7}{24} \right) \right)
\]

Let \( B = \tan (\theta - \beta) \), if \( \sin \theta = \frac{5}{13} \) and \( \sin \beta = -\frac{5}{13} \). \( \theta \) is in quadrant 1 and \( \beta \) is in quadrant 4.

Let \( C \) (measured in degrees) = \( \theta \) if \( \sin (1 - 4\theta) = \cos (7 + 10\theta) \)

**Find the value of** \( \frac{169ABC}{44} \).
Let $A = \lim_{x \to \infty} \frac{\sqrt{4x^2+3}}{x-3}$

Let $B = \lim_{x \to 1} f(x) = \begin{cases} x^2 + 4, & x \neq 1 \\ 2, & x = 1 \end{cases}$

Let $C = \lim_{x \to 0} \frac{1}{x+4} - \frac{1}{4}$

Let $D = \lim_{x \to 3} \frac{3-\sqrt{x+6}}{3-x}$

Find the value of $A \cdot B \cdot C \cdot D$.

During the spin cycle on a certain washing machine, the chamber inside the washer rotates 20 times per second. If a coin is on the chamber wall (assume the diameter of the chamber is 28 inches), let $A =$ the angular velocity in radians per minute.

A circular Ferris wheel needs 42.0 seconds to complete one revolution. The radius of the wheel is 165 feet. Let $B =$ the number of feet a person would travel during a 7 minute ride.

Find the value of $A + B$.

Let $A = \frac{\sin 3x - \sin x}{\cos x + \cos 3x}$

Let $B = \frac{\cot \left( \frac{\pi}{2} - x \right)}{\sec \left( \frac{\pi}{2} - x \right) + \tan \left( \frac{\pi}{2} - x \right)} + 1$

Find the value of $\frac{A}{B}$.
There exists a triangle with sides of length $X$, $Y$, and $Z$. If $YZ = X^2$ and $Y + Z = 2X$, Let $A =$ the acute angle (in degrees) opposite the side of length $X$.

Let $B =$ the angle (in degrees) between the two tangents which can be drawn from the point $(1, 2)$ to the conic $2x^2 + 2y^2 - 12x - 16y + 42 = 0$?

**Find the value of $A - B$.**

Let $A =$ the product of the solutions of $(\log_2 x)^2 - \log_2 x = \log_2 64$

Let $B =$ the $y$-coordinate of the point of intersection, if $y = 2 - \log_2 (x - 2)$ and $y = -1 + \log_2 x$

Let $C =$ the value of $\log_x 32$ in terms of “$y$” if $y = (\log_x 32)(\log_{32} 16)$

**Find the value of $A \cdot B \cdot C$.**

Let $A =$ the value of the determinant

$$\begin{vmatrix} 1 & 2 & -1 & 1 \\ 3 & 4 & 2 & 0 \\ 0 & 1 & 3 & 2 \\ 2 & 1 & -1 & 0 \end{vmatrix}$$

Let $B =$ the sum of the elements in the inverse of the following matrix

$$\begin{pmatrix} 1 & 1 & 1 \\ 3 & 5 & 4 \\ 3 & 6 & 5 \end{pmatrix}$$

**Find the value of $A + B$.**
Let $A = \text{the sum of the zeros of } f(x), \text{ if } f(2x - 6) = 4x^2 - 8x + 1$

Let $B = \text{the number of rational solutions to } (x^2 - 9)(x^4 - 3x^2 - 2) = 2(x^2 - 9)$

Let $C = \text{the absolute value of the difference between the largest and smallest root of: } (x^2 + x - 2)^2 - (x^2 - x - 6)^2 = 0$

Find the value of $A + B + C$.

Let $A = x - y$, if $\sqrt{x} + \sqrt{y}i = \sqrt{9 + 4\sqrt{5}}i$

Let $B = |5 - 2i| \cdot |2 - 5i|$

Let $C = 2010i^{2010}$

Let $D = x + y$, if $(5 - 4i) - (x + yi) = 2$

Find the value of $A + B + C + D$.

$(\sqrt[3]{3} + i)^9$ can be expressed as a complex number in the form $A + Bi$

$20cis \frac{11\pi}{6}$ can be expressed as a complex number in the form $C + Di$

Find the value of $A + B + C + D$. 
Let $A =$ the area of the triangle formed by the vertex and the two endpoints of the latus rectum of the following conic: $y^2 + 8x = 6y - 25$

Let $B =$ the area of the rectangle formed by the four vertices of the latus recti of the following conic: $9x^2 + 25y^2 - 18x - 150y + 9 = 0$

Find the value of $\frac{B}{A}$.

Let $A =$ how many numbers between 450 and 700 that can be formed using only the digits 3, 4, 5, 6, 7, and 8.

Let $B =$ the number of arrangements of the letters in the word TRIANGLE that begin with three vowels.

Given 10 points, 6 of which are collinear, but no other three are. Let $C =$ the number of triangles that have 3 of these points as vertices.

Find the value of $A + B + C$.

Let $A =$ the acute angle (in radians) between the vectors $u = i + 2j - k$ and $v = i + j$

Let $B =$ $\csc\left(\cot^{-1}(-4)\right)$

Express the rectangular point $(0, -12)$ in polar form $(r, \theta)$ if $r \geq 0$ and $-360^\circ \leq \theta < 0$.

Find the value of $A \cdot B \cdot r \cdot \theta$. 