

AP Calculus – Across and Down

Clue Set: #1

Topic: Limits

Only digits (0 – 9) and negative signs are allowed. If an answer is an integer, use leading zeros to make the answer fit. (Ex: If 4 digits are required and your answer is 46, enter 0046.) If an answer has decimal places, the decimal point is dropped and trailing zeros are used to make the answer fit to the required number of decimal places which is specified in the problem. (Ex: If 2 decimal places are required and your answer is 12.4682, round to 12.47 and enter 1247. If one decimal place is required and your answer is 15, write 15.0 and enter 150. If one decimal place is required and your answer is 0.5, wrote 05.)



Across

None

Down

D8. Find $\lim_{x \rightarrow 0} (e^x - \cos x)(e^x - \sin x)$.

D20. Find $\lim_{x \rightarrow -\infty} \frac{3x^3}{\sqrt{x^6 - x^3 + 15}}$. Enter 99 if you believe the answer to be undefined.

D33. Find $\lim_{x \rightarrow 3} \frac{-x^3 + 1.62x^2 + 4.14x}{x - 3}$.

D48. Find $\lim_{x \rightarrow \infty} \frac{6x}{\sqrt{1600x^2 - 8x + 50}} - \lim_{x \rightarrow -\infty} \frac{6x}{\sqrt{1600x^2 + 8x - 50}}$ (one decimal place).

D69. The whole numbers a and b each have one digit. If $\lim_{x \rightarrow 3} f(x)$ and $\lim_{x \rightarrow 1} g(x)$ both exist and

$$f(x) = \begin{cases} bx^2, & x \geq 3 \\ ax + 6, & x < 3 \end{cases} \quad \text{and} \quad g(x) = \begin{cases} -a \cos(\pi x), & x \geq 1 \\ b \sec^2\left(\frac{\pi x}{4}\right), & x < 1 \end{cases}, \text{ write } a \text{ then } b.$$