# AP Calculus – Across and Down

Clue Set: #10

Topic: Function Analysis

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.)
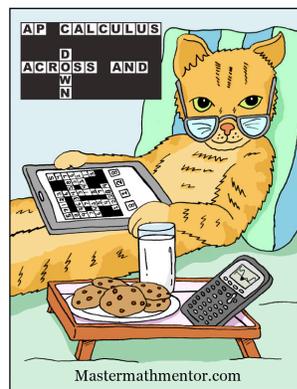
Across

A40. The graph of $f'(x)$, defined on [0, 9] is on the right. The graph of $f(x)$ is increasing and concave up on the interval $[a,b]$. Write a then b as a two-digit number.
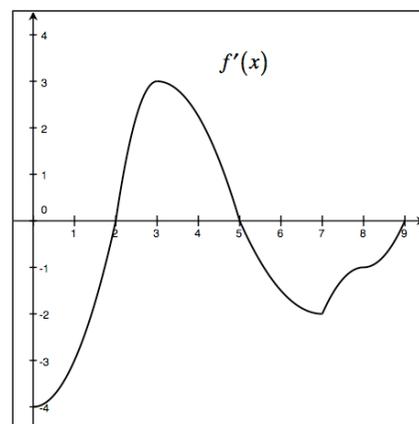
A68. The function $f(x) = 90x^2 - x^3 - 1500x$ is increasing on the interval $[a,b]$ where a and b are two-digit numbers. Write a, then b as a four-digit number.

D14. The continuous graph to the right is $f'(x)$, defined on the interval $[-5,\infty)$. Find the two-digit number EI representing the number of relative extrema and number of inflection points of (for instance, 3 relative extrema and 2 inflection points would have an answer of 32).
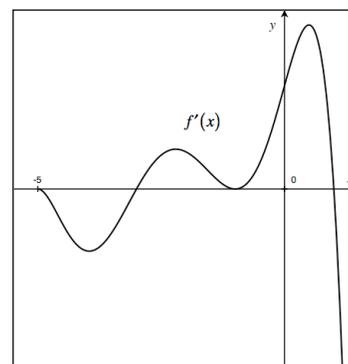
D55. Let $f'(x)$ be the product of 21 terms defined by:

$$f'(x) = (x+4)(x+3)(x+2)\dots(x)(x-1)\dots(x-14)(x-15)(x-16).$$

If $x = a$ is the location of the leftmost relative maximum to f and $x = b$ is the location of the rightmost relative maximum to f, write a then b.   For instance, if you think that $a = -1$ and $b = 10$, then your answer would be -110.