

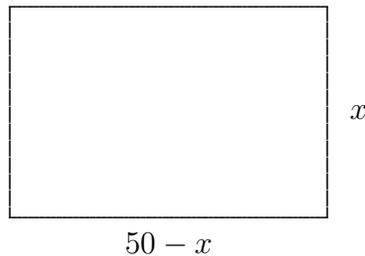
The Corral

Dr. Zee, the world famous child care expert, had 100 yards of fencing material, and he wished to fence in a rectangular play yard for his children. Being an expert in parenting he wanted the yard to have the greatest possible area.

“Hmm,” mused Dr. Zee. “I wonder what the dimensions should be.”

“Sir,” suggested Dr. Zee’s talented assistant, “Could we use the first derivative te...?”

“Eureka!” shouted Dr. Zee. “I’ve got it; we’ll use the first derivative test!” Dr. Zee quickly sketched the following diagram in the dirt.



“If we let x represent the length of one side, then the opposite side also has length x . That leaves $100 - 2x$ for the remaining two sides, or $50 - x$ for each of the remaining two sides. Thus, the area of the yard is given by the function $A(x) = (50 - x)x$,” continued Dr. Zee, “and $A'(x) = (50 - x)(1) + (-1)x = 50 - 2x = 2(25 - x)$, so $A'(x) > 0$ if $x < 25$ and $A'(x) < 0$ if $x > 25$. We can now use the first derivative test to assert that $A(x)$ is a maximum when $x = 25$.”

Dr. Zee stood up and turned to his assistant. “Bring that roll of fencing,” he said, “we’ll fence in a square area 25 yards on each side.”

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