

Re: Optimization of integral

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In article <198e254c.0410111026.3d8052f6@posting.google.com>, Mark Flanagan <john_g_proakis@hotmail.com> wrote:

> *I am interested in proving the following conjecture. It seems like it should have a "neat" proof, as opposed to, say, using calculus of variations...*

> *****

> *If $G(x)$ is a given continuous function on $x \in [0,1]$ satisfying*

> $\int_0^1 G(x) dx = 1$

> *and*

> $G(x) \neq 0$ on $x \in [0,1]$

> *and $Q(x)$ is allowed to be any continuous function on $x \in [0,1]$*

> *satisfying*

> $\int_0^1 Q(x) dx = 1$

> *Then,*

> $\int_0^1 (Q(x)/G(x))^2 dx \geq 1$

> *with equality iff $Q(x) = G(x)$ for all $x \in [0,1]$*

> *****

> *Any ideas?*

> -- Mark

counterexample...

$G(x) = x + (1/2); Q(x) = (7/4)x + (1/8);$

sci.math: Re: Optimization of integral

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