Wednesday, January 16

Clicker Questions

Clicker Question 1

Definite integrals of odd and even functions

Suppose that $o(x)$ is an odd function and $e(x)$ is an even function. Which of the following statements is always true? (Hint: think geometrically.)

A. $\int_{-5}^{5} o(x)\,dx$ always equals 0

B. $\int_{-5}^{5} o(x)\,dx$ always equals $\int_{-5}^{5} e(x)\,dx$

C. $\int_{-5}^{5} o(x)\,dx$ is always an odd integer

D. $\int_{-5}^{5} e(x)\,dx$ always equals 0

E. $\int_{-5}^{5} e(x)\,dx$ is always nonnegative

Clicker Question 2

Find a matching pair

Suppose that F is an antiderivative of f. Of the following four expressions, which two are equal to each other? (Hint: what is the derivative of $F(g(x))$? Use FTC part 2.)

A. $\displaystyle\int_a^b f(u)\,du = F(u)\Big]_a^b = F(b) - F(a)$

B. $\displaystyle\int_a^b f(g(x))g'(x)\,dx = F(g(x))\Big]_a^b = F(g(b)) - F(g(a))$

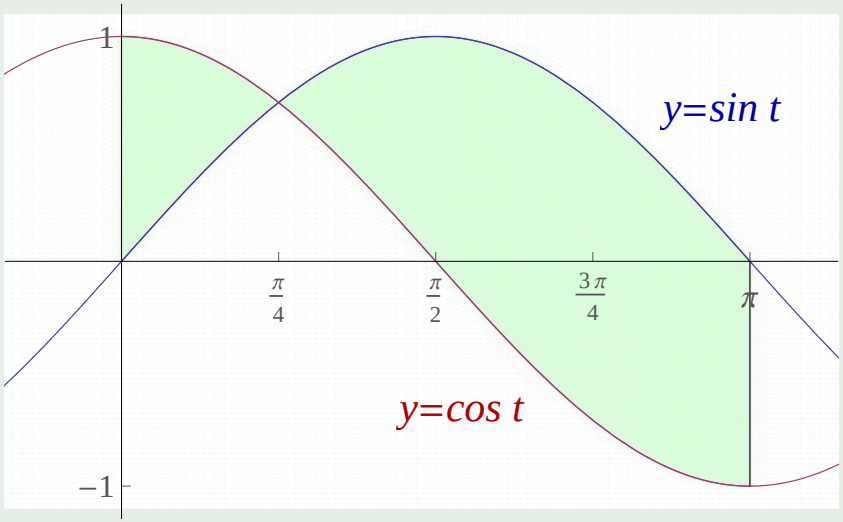
C. $\displaystyle\int_{g(a)}^{g(b)} f(u)\,du = F(u)\Big]_{g(a)}^{g(b)} = F(g(b)) - F(g(a))$

D. $\displaystyle\int_{f(a)}^{f(b)} g'(x)\,dx = g(x)\Big]_{f(a)}^{f(b)} = g(f(b)) - g(f(a))$

Clicker Question 3

Area between curves

Calculate the area between the graphs of $y = \sin t$ and $y = \cos t$ from $t = 0$ to $t = \pi$.



A. 1

B. $2\sqrt{2}$

C. $\sqrt{2} - 1$

D. 2

E. none of the above

Which one is on top?

$$\int_0^{\pi/4} \left(\cos t - \sin t\right) dt + \int_{\pi/4}^{\pi} \left(\sin t - \cos t\right) dt$$