Wednesday, January 28

Clicker Questions

Clicker Question 1

The integration by parts formula (shorthand version)

$$\int u\,dv = uv - \int v\,du$$

Choosing the parts

Which of the following is a valid choice for using integration by parts on this integral?

$$\int \sin^{-1} x\,dx$$

A. $u = 1/\sin x$ and $dv = dx$

B. $u = \sin x$ and $dv = x^{-1}\,dx$

C. $u = \sin^{-1}$ and $dv = x\,dx$

D. $u = \sin^{-1} x$ and $dv = dx$

E. $u = \sin x$ and $dv = x\,dx$

Exercise for you

Use integration by parts and a substitution to show that

$$\int \sin^{-1} x\,dx = x\sin^{-1} x + \sqrt{1-x^2}.$$

Clicker Question 2

Integration by parts for definite integrals

The definite integral $\int_a^b f(x)g'(x)\,dx$ equals:

A. $\int_a^b f(x)g(x)\,dx - f'(x)g(x)\Big]_a^b$

B. $\int_a^b f(x)g(x)\,dx - \int_a^b f'(x)g(x)\,dx$

C. $f(x)g(x)\Big]_a^b - \int_a^b f'(x)g(x)\,dx$

D. $f(x)g(x)\Big]_a^b - f'(x)g(x)\Big]_a^b$

E. none of the above