

Friday, January 25

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

Clicker Question 2

Integration by parts for definite integrals

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

- A. $f(x)g(x) \Big|_a^b - f'(x)g(x) \Big|_a^b$
- B. $\int_a^b f(x)g(x) dx - f'(x)g(x) \Big|_a^b$
- C. $f(x)g(x) \Big|_a^b - \int_a^b f'(x)g(x) dx$
- D. $\int_a^b f(x)g(x) dx - \int_a^b f'(x)g(x) dx$
- E. none of the above

Clicker Question 3

Double-angle formula

Which identity is a correct identity?

- A. $\cos 2x = 2 \cos^2 x - 1$
- B. $\cos 2x = \cos^2 x - \sin^2 x$
- C. $\cos 2x = 1 - 2 \sin^2 x$
- D. $\cos 2x = 2 \sin x \cos x$
- E. none of the above

Three correct answers!

These formulas are all equivalent, because

$$\sin^2 x + \cos^2 x = 1.$$