

QUIZ 7

1. (5 points) Each of the following integrals could be computed using integration by parts; however, only one of them must be evaluated using integration by parts and no other method. Identify this integral. For bonus points, explain why you don't have to use integration by parts on the others.

a. $\int x^2(1 - \sqrt{x}) dx$

$$= \int (x^2 - x^{5/2}) dx$$

b. $\int \cos x \tan x dx$

$$= \int \sin x dx$$

c. $\int x(2x^2 - 1)^3 dx$

$$= \frac{1}{4} \int u^3 du \quad \text{where } u = 2x^2 - 1 \quad \text{and} \quad du = 4x dx$$

d. $\int x^2 e^{2x} dx$

2. (5 points) Identify the functions $f(x)$, $f'(x)$, $g(x)$, and $g'(x)$ (or u , du , v , dv) that you should use in order to evaluate the following integral using integration by parts.

$$\int x^5 \sin(3x) dx$$

$$f(x) = x^5$$

$$f'(x) = 5x^4$$

$$g'(x) = \sin(3x)$$

$$g(x) = -\frac{1}{3} \cos(3x)$$