Quiz 1 Solutions

Fall 2018

MATH 222

Name: _____

Problem 1. (4 Points) Answer the following questions. **No** partial credit will be given, and you **do not** need to show your work.

(a) Complete the integration by parts formula:

$$\int u\,dv = \_\_\_\_\_$$

(b) Circle the correct answer:

$$\cos^2(x) = \qquad \tfrac{1}{2}(1+\cos(2x)) \qquad \text{or} \qquad \tfrac{1}{2}(1-\cos(2x))$$

Solution 1.

(a) $\int u\,dv = uv - \int v\,du$.
(b) $\cos^2(x) = \frac{1}{2}(1+\cos(2x))$.

□

Problem 2. (6 Points) Compute $\int x\ln(2x)\,dx$

Solution 2.

Let $u = \ln(x)$ and $dv = x$ so $du = \frac{1}{x}$ and $v = x^2/2$ and plugging this into the integration by parts formula we have

$$= \frac{x^2\ln(x)}{2} - \int \frac{x}{2}\,dx = \frac{x^2\ln(x)}{2} - \frac{x^2}{4} + C$$

□