

QUIZ 2 SOLUTIONS: LESSON 1A
JANUARY 11, 2019

Write legibly, clearly indicate the question you are answering, and put a box or circle around your final answer. If you do not clearly indicate the question numbers, I will take off points. Write as much work as you need to demonstrate to me that you understand the concepts involved. If you have any questions, raise your hand and I will come over to you.

1. [5 pts] Evaluate $\int (x-2)^7 dx$.

$$\begin{aligned} u &= x-2 \\ \frac{du}{dx} &= 1 \Rightarrow du = dx \\ \int (x-2)^7 dx &= \int u^7 du \\ &= \frac{1}{7+1} u^{7+1} + C \\ &= \frac{1}{8} u^8 + C \\ &= \boxed{\frac{1}{8} (x-2)^8 + C} \end{aligned}$$

2. [5 pts] Evaluate $\int \frac{8 \sin(2x)}{\cos^5(2x)} dx$.

Chain Rule \rightarrow

$$\begin{aligned} \int \frac{8 \sin(2x)}{\cos^5(2x)} dx &= \int \frac{8 \sin(2x)}{(\cos(2x))^5} dx \\ u &= \cos(2x) \\ \frac{du}{dx} &= -2 \sin(2x) \\ \Rightarrow dx &= \frac{du}{-2 \sin(2x)} \\ &= \int \frac{8 \sin(2x)}{u^5} \left(\frac{du}{-2 \sin(2x)} \right) \\ &= \int \frac{-4 du}{u^5} \\ &= \int -4 u^{-5} du \\ &= \frac{-4}{-5+1} u^{-5+1} + C \\ &= \frac{-4}{-4} u^{-4} + C \\ &= \boxed{(\cos(2x))^{-4} + C} \end{aligned}$$