

Each problem is worth 5 points. Clear and complete justification is required for full credit.

1. Evaluate $\int \tan^3 x \sec^2 x dx$.

$$\int \tan^3 x \sec^2 x dx$$

$$u = \tan x \quad \frac{du}{dx} = \sec^2 x \quad dx = \frac{du}{\sec^2 x}$$

$$\int u^3 \sec^2 x \cdot \frac{du}{\sec^2 x}$$

$$\int u^3 du$$

$$\frac{u^4}{4} \quad \boxed{\frac{\tan^4 x}{4} + C}$$

Good

2. Evaluate $\int x \arccos x dx$.

Parts!

$$= \frac{x^2}{2} \cdot \arccos x - \int \frac{x^2}{2} \cdot \frac{-1}{\sqrt{1-x^2}} dx$$

$$u = \arccos x \quad v = \frac{x^2}{2}$$

$$du = \frac{-1}{\sqrt{1-x^2}} \quad dv = x$$

$$= \frac{x^2}{2} \cdot \arccos x + \frac{1}{2} \int \frac{x^2}{\sqrt{1-x^2}} dx$$

Hey! Wait! That's an ugly Trig Sub still needing done! I didn't mean to trick one that ugly. Rats. I guess I'll give full credit to anyone who gets that far. Oh well.