

Math 132 Quiz
9 AM - 10 AM

1. Calculate

$$\frac{7x+11}{(x+2)(x-1)} = \frac{A}{x+2} + \frac{B}{x-1}$$

$$7x+11 = A(x-1) + B(x+2)$$

$$x=1 \Rightarrow 18 = 3B \\ 6 = B$$

$$x=-2 \Rightarrow -3 = -3A \\ 1 = A$$

$$\int \frac{7x+11}{x^2+x-2} dx.$$

$$= \int \frac{1}{x+2} + \frac{6}{x-1} dx$$

$$= \ln|x+2| + 6\ln|x-1| + C$$

2. Using a trigonometric substitution, calculate

$$x = 5 \sin \theta \\ dx = 5 \cos \theta d\theta$$

$$\int \frac{x}{(25-x^2)^{3/2}} dx.$$

$$= \int \frac{5 \sin \theta}{(25-25 \sin^2 \theta)^{3/2}} \cdot 5 \cos \theta d\theta$$

$$= \int \frac{25 \sin \theta \cos \theta}{(25 \cos^2 \theta)^{3/2}} d\theta$$

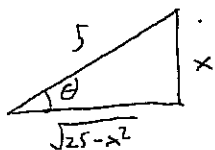
$$= \int \frac{25 \sin \theta \cos \theta}{125 \cos^3 \theta} d\theta$$

$$= \frac{1}{5} \int \frac{\sin \theta}{\cos^2 \theta} d\theta$$

$$= \frac{1}{5} \int \tan \theta \sec \theta d\theta$$

$$= \frac{1}{5} \sec \theta + C$$

$$= \frac{1}{5} \cdot \frac{5}{\sqrt{25-x^2}} + C = \frac{1}{\sqrt{25-x^2}} + C$$



$$\sec \theta = \frac{5}{\sqrt{25-x^2}}$$