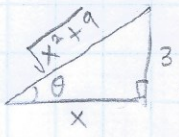


9.3

✓ 4) $\int \frac{1}{x\sqrt{9+x^2}} dx$

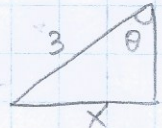


$x = 3 \tan \theta$
 $dx = 3 \sec^2 \theta d\theta$
 $\int \frac{3 \sec^2 \theta}{(3 \tan \theta)(3 \sec \theta)} d\theta = \frac{1}{3} \int \csc \theta d\theta$
 $= \frac{1}{3} \ln | \csc \theta - \cot \theta | + C$
 $= \frac{1}{3} \ln \left| \frac{\sqrt{x^2+9} - 3}{x} \right| + C$


11) $\int \frac{1}{(36+x^2)^2} dx = \int \frac{1}{(36+x^2)} \cdot \frac{1}{(36+x^2)} dx$
 $= \int \frac{1}{((36+x^2)^4)} dx \quad ???$

13) (replacement)

$\int \frac{1}{\sqrt{9-x^2}} dx$
 $x = 3 \sin \theta$
 $dx = 3 \cos \theta$
 $\int \frac{3 \cos \theta}{3 \cos \theta} d\theta = \int 1 d\theta = \theta$
 $= \sin^{-1} \left(\frac{x}{3} \right) + C$

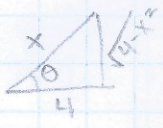


✓ 5) $\int \frac{1}{x^2 \sqrt{x^2-25}} dx$



$x = 5 \sec \theta$
 $dx = 5 \sec \theta \tan \theta$
 $= \int \frac{5 \sec \theta \tan \theta}{(25 \sec^2 \theta)(5 \tan \theta)} d\theta$
 $= \frac{1}{25} \int \cos \theta d\theta = \frac{1}{25} \sin \theta + C$
 $= \frac{\sqrt{x^2-25}}{25x} + C$

6) $\int \frac{x}{\sqrt{4-x^2}} dx$



$x = 4 \sec \theta$
 $dx = 4 \sec \theta \tan \theta$
 $\int \frac{4 \sec \theta \tan \theta \cdot 4 \sec \theta}{(4 \tan \theta)} d\theta$
 $= 4 \int \sec^2 \theta d\theta = 4 \int \frac{1}{\cos^2 \theta} d\theta$
 $= 4 \tan \theta = \frac{\sqrt{4-x^2}}{-\sqrt{4-x^2}} + C$
 close...: (