

MATH 251
WORKSHEET #7

Final Quiz #6, April 14-15, covers sections

3.5 (The Inverse Trigonometric Functions + Right Triangle Rule, see worksheet #5),

4.4 (Graph Sketching, see worksheet #5 + quiz #4),

5.5 (The Fundamental Theorem of Calculus).

1. Find the integrals:

(a) $\int_0^{\pi} \sin x \, dx$

(b) $\int \frac{dx}{\cos^2 x}$

(c) $\int_{-\pi/4}^{\pi/4} \frac{dx}{\cos^2 x}$

(d) $\int_a^b f'(g(x)) g'(x) \, dx$

2. Find the derivatives:

(a) $\frac{d}{dx} \int_2^x \frac{\sin t}{t} dt$

(b) $\frac{d}{dx} \int_x^3 \frac{\sin t}{t} dt$

(c) $\frac{d}{dx} \int_0^{x^2} \frac{\cos t}{1+t^2} dt$