

Calculus II - Final practice A

1. Integration by parts.

$$(a) \int x \sin^2 x \, dx \quad (b) \int x 4^x \, dx \quad (c) \int x \sin^{-1} x \, dx \quad (d) \int \ln(9x^2 - 1) \, dx$$

2. Trig sub.

$$(a) \int \frac{\sqrt{9+x^2}}{x} \, dx \quad (b) \int \frac{\sqrt{1-9x^2}}{x} \, dx \quad (c) \int \frac{1}{x\sqrt{9x^2-1}} \, dx \quad (d) \int \frac{x}{\sqrt{9x^2-1}} \, dx$$

3. Clever u -sub then trig sub.

$$(a) \int \frac{1}{x\sqrt{9x-1}} \, dx \quad (b) \int \frac{dx}{\sqrt{e^x-1}}$$

4. Partial fractions.

$$(a) \int \frac{1}{x^2(x^2+1)} \, dx \quad (b) \int \frac{1}{x^2(x^2-1)} \, dx$$

5. Trig power products.

$$(a) \int_0^{\pi/2} \cos^3(x) \sin(2x) \, dx \quad (b) \int \tan^5 x \sec^4 x \, dx$$