

Exam II
Math 166, Section A2

Useful Formulas:

$$\begin{aligned}\frac{d}{dx} \tan(x) &= \sec^2(x) \\ \tan^2(x) + 1 &= \sec^2(x) \\ \cos^2(x) &= \frac{1 + \cos(2x)}{2} \\ \sin^2(x) &= \frac{1 - \cos(2x)}{2}\end{aligned}$$

1. $\int \frac{x^2}{x-1} dx$
2. $\int \sin^3(x) \cos^2(x) dx$
3. $\int \frac{2}{e^{-x} + 1} dx$
4. $\int x \ln(x) dx$
5. $\int \frac{x^2 + x + 2}{x(x^2 + 1)} dx$
6. $\int \frac{1}{x^2 \sqrt{16 - x^2}} dx$ using $x = 4 \cos(\theta)$.
7. $\int \frac{x}{\sqrt{4 - x^2}} dx$
8. $\lim_{x \rightarrow 0} \frac{x^2}{\sin(x)}$
9. $\int_0^1 \frac{1}{\sqrt{x}} dx$
10. $\int x \sin(x^2) dx$