1. Let $f(x) = x^4 - 3x^2 + 5$. Calculate $f'(x)$.

2. Let $g(\theta) = e^{\sin(2\theta)}$. Calculate $g'(\theta)$.

3. Let $h(t) = \frac{1}{1-t^2}$. Calculate $h'(t)$.

4. Let $y = 4 \sin^2 x$. What is the slope of the tangent line at $(\pi/6, 1)$?

5. Let $y = \sqrt{1 + 4 \sin x}$. What is the slope of the tangent line at $(0, 1)$?

6. Calculate $\int_1^2 8x^4 + 3x^2 \, dx$.

7. Calculate $\int_0^1 x^2 \cos(x^3) \, dx$.

8. Calculate $\int_1^e \ln x \, dx$.

9. Calculate $\int x \cos(5x) \, dx$.

10. Calculate $\int (\ln x)^2 \, dx$. 

Calculus Review Problems

Calculus and Linear Algebra II

Spring 2020