

Thirty minutes maximum. No aids (book, notes, calculator, phone, etc.) are permitted. Show all work and use proper notation for full credit. Answers should be in reasonably simplified form.

1. (5 points.) Compute $\frac{d}{dx}(\log_2(x))$.

2. (8 points.) Compute $\int x \cos(x) dx$.

3. (8 points.) Compute $\int x^3 e^{2x} dx$.

4. (8 points.) Compute $\int \sin^5(x) \cos^2(x) dx$.

5. (8 points.) Compute $\int \sin^2(x) dx$.

6. (4 points.) BONUS: Compute $\int e^x \sin(x) dx$.