

Graded out of 40 points. 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. Evaluate the following antiderivatives.

(a) (8 points.) $\int x \sec^2(x) dx$

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

(c) (8 points.) $\int x \ln(x) dx.$

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

(e) (8 points.) $\int \cos^4(x) dx$

(f) (4 points.) BONUS: Evaluate $\int (\ln(x))^2 dx$