

Name: _____ 252 Substitution Lab

For all questions; evaluate the indefinite or definite integral.

1. $\int e^x \cos(e^x) dx$

2. $\int x^2 \sqrt{1+x^3} dx$

3. $\int_1^2 4xe^{x^2} dx$

4. $\int \frac{x^2}{1+x^6} dx$

5. $\int (4t+2)^{3.1} dt$

6. $\int (x^2+1)(x^3+3x)^4 dx$

7. $\int_e^{e^e} \frac{1}{x \ln x} dx$

8. $\int \sec^3 x \tan x dx$

9. $\int_1^3 \frac{e}{(1-4x)^3} dx$

10. $\int \frac{1}{\sqrt{1-x^2} \sin^{-1} x} dx$

11.

a. $\int \sin x \cos x dx$ (one way)

b. $\int \sin x \cos x dx$ (the other way)

c. Explain why the answers for a) and b) are both valid

12. $\int \frac{1+x}{1+x^2} dx$ Hint: Split into a sum

13. $\int x^2 \sqrt{2+x} dx$ Hint: Solve for x^2 once you have chosen u .

14. $\int \frac{\sin(2x)}{1+\cos^2 x} dx$ Hint: Use a trig identity first