MATH 122: IDENTIFYING INTEGRAL SUBSTITUTIONS

ANN CLIFTON
UNIVERSITY OF SOUTH CAROLINA

Name: _____

Goal: To identify what (if any) u-substitutions are necessary to compute an integral and to practice making such substitutions.

For each problem, identify what (if any) u-substitution(s) need to be made to evaluate each integral. Make the substitution and simplify, but **do not** evaluate the integral.

1: $\int x \sin(x^2) dx$

2: $\int \sqrt{x}(x+3) dx$

3: $\int \frac{\sqrt{\ln(x)}}{x} dx$

4: $\int \frac{x+4}{x} dx$

5: $\int \frac{e^x}{\sqrt{1-e^{2x}}} dx$

6: $\int \frac{3x^2}{\sqrt{1-x^3}} dx$

7: $\int (4-2x)^3 dx$

8: $\int 4x \tan(x^2) dx$

9: $\int \frac{dx}{x(\ln x)^2}$

10: $\int x4^{x^2}dx$

11: Show the following two integrals are equivalent by identifying the correct u-substitution:

$$\int 3x\sqrt{9+x^2}dx = \int \frac{3\sqrt{u}}{2}du$$