Name_____

CALCULUS JOURNAL
INTEGRATION

1. Two names for the process of reversing a derivative are _____

    and _____

2. What must be included in the solution of all indefinite integrals? _____

3. For each type of integration problem, describe what part of the function should be substituted.

    a) quantity to a power _____

    b) trig function to a power _____

    c) trig function with an argument _____

    d) trig function to a power with an argument _____

    e) natural log of a quantity _____

    f) 1 over a quantity _____

    g) e to a quantity power _____

4. When you substitute for a variable and not all of the original variables cancel out, you should eliminate
    the remaining variables by _____

    _____.

5. List the 3 steps for integrating a function which results in an inverse trig function.

    1. _____

    2. _____

    3. _____

6. A definite integral results in _____

    while an indefinite integral results in _____.

7. In terms of a graph, a definite integral represents _____

    _____.

8. (a) What should be done if the limits of integration are reversed such as $\int_8^3 f(x)\ dx$? _____

    _____.

    (b) What can be done with a constant coefficient on a function such as $\int_a^b c \cdot f(x)\ dx$? _____.

9. (a) What will result from $\frac{d}{dx}\int_a^x f(t)\ dt$? _____

    (b) What will result from $\frac{d}{dx}\int_a^{g(x)} f(t)\ dt$? _____

10. Explain the meaning/purpose of each of the four parts of the following expression.

    $$\lim_{\Delta x \to 0} \sum_{x=a}^{b} f(x)\,\Delta x$$

11. List the following rules, facts, or formulas.
   a) Power rule for integration

   b) Integration rules for the 6 trig functions

   c) Integration rules for $\ln x,\ e^x,$ and a^x.

   d) Integration rules for the 3 primary inverse trig functions

   e) List the formula for the Mean Value Theorem for Integrals and explain what it represents in terms of a graph. *(Must include a diagram.)*