A.   **Rewriting Techniques**

1.   Negative and Fractional Exponents

2.   Divide and Conquer

3.   Foil/Factor

4.   Distribute

5.   Trigonometric Identities

6.

7.

B.   **Power Rule for Integrals**

$$\int u^n \, du = \frac{u^{n+1}}{n+1} + C \quad n \neq -1$$

C.   **U-Substitution**

1.   Radical $\int \sqrt{x-4} \, dx \rightarrow \int \sqrt{u} \, du$

2.   Base of an exponent $\int (5x-4)^3 \, dx \rightarrow \int u^3 \, du$

3.   Denominator $\int \frac{1}{3x-4} \, dx \rightarrow \int \frac{1}{u} \, du$

4.   Trig angle $\int \sin(5x) \, dx \rightarrow \int \sin u \, du$

5.   Trig function
$u = \tan x \quad \int \sec^2(x)\tan(x) \, dx \rightarrow \int u \, du$

6.   U Substitution with a *Twist*

7.

D.   **Logarithms**

$$\int \frac{1}{u} \, du = \quad \ln|u| + c$$

E.   **Trigonometric Integrals**

1. $\int \cos x \, dx = \sin x + C$

2. $\int \sin x \, dx = -\cos x + C$

*3. $\int \tan x \, dx = -\ln|\cos x| + c \text{ or } \ln|\sec x| + c$

4. $\int \cot x \, dx = \ln|\sin x| + c$

*5. $\int \sec x \, dx = \ln|\sec x + \tan x| + c$

*6. $\int \csc x \, dx = -\ln|\csc x + \cot x| + c$

* **New Trig Integrals**

7. $\int \sec^2 x \, dx = \tan x + C$

8. $\int \csc^2 x \, dx = -\cot x + C$

9. $\int \sec x \tan x \, dx = \sec x + C$

10. $\int \csc x \cot x \, dx = -\csc x + C$

sec tan sec
-csc cot csc