

Name: _____

Date: _____

AP Calculus AB: Additional Algebraic Techniques for Anti-differentiation

Do Now:

Evaluate each of the following.

1. $\lim_{x \rightarrow 0} \frac{e^x - x - 1}{x^2}$

4. $\lim_{x \rightarrow \infty} \frac{e^x}{x^2}$

2. $\lim_{x \rightarrow \frac{\pi}{3}} \frac{\cos x - \frac{1}{2}}{x - \frac{\pi}{3}}$

5. $\lim_{x \rightarrow \pi} \frac{1 + \cos x}{\sin 2x}$

3. $\lim_{x \rightarrow 0} \frac{x}{e^x}$

Additional Algebraic Techniques for Anti-differentiation

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

2. $\int_{-2}^1 \frac{x^2}{x+3} dx$

3. $\int \frac{1}{2x^2 - 12x + 26} dx$

4. $\int \frac{dx}{\sqrt{21 - 4x - x^2}}$

Practice

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

5. $\int \frac{dx}{x^2+2x+2}$

2. $\int \frac{1}{x^2+6x+14} dx$

6. $\int \frac{1}{\sqrt{-2x^2-8x-6}} dx$

3. $\int_0^1 \frac{x^3}{2x^2+1} dx$

7. $\int_3^4 \frac{dx}{x^2-6x+10}$

4. $\int \frac{x+6}{x-3} dx$