4. Do WebAssign 7.3. Start with the WebAssign. Remember that the WebAssign will be reopened three days before Exam I for you to review the problems. You will be allowed to improve your score by a maximum of three points. However, additional attempts on the problems will not be given.

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5. Use integration by parts to evaluate $\int_0^1 s \arcsin(s^2)\, ds$.

Use the table of integrals to find the antiderivatives:

6. $\int \tan^4 \alpha \, d\alpha$

Use the table of integrals to find evaluate the integrals:

7. $\int x^3 \sin(5x)\, dx$

8. $\int_0^1 \dfrac{dx}{x^2 + 2x + 5}$

9. $\int_0^{1/\sqrt{2}} \dfrac{x}{1 - x^4}\, dx$

Algebraic Identities

Section 7.4a
September 1, 2016

Name:
Math 129 - 01

Understand	Know that only proper rational functions can be decomposed into partial fractions
Understand	Know the structure of partial fraction decomposition for rational functions with (i) distinct linear factors, (ii) repeated factors and (iii) unfactorable quadratic factors.
Apply	Use polynomial division to simplify improper rational functions.
Apply	Decompose rational functions by (i) comparing coefficients of the resulting polynomial.
Apply	Decompose rational functions by (ii) evaluating the resulting polynomial at strategic points.
Apply	Solve integrals with rational functions by partial fraction decompostion
Sythesize	Use partial fractions in conjuction with other methods to evaluate more complicated integrals

1. Let $P_n(x)$ be a polynomial of degree n. Identify the structure of the partial fraction expansion:

$$\frac{P_1(x)}{(x-1)(x+1)} = \frac{A}{x-1} + \frac{B}{x+1}$$

$$\frac{P_2(x)}{(x-1)(x^2+1)} =$$

$$\frac{P_2(x)}{(x-1)(x+1)^2} =$$

2. For a particular pair of constants A and B, the following polynomial is true for all x,

$$1 = A(x-5) + B(x-2).$$

We wish to find the value of A and B. The book demonstrates the method of "comparing coefficients" on the top of page 377. In this item, we will explore a new method by evaluating the equation for *convenient* values of x.

Set $x = 2$ and solve for A.

What is the most convenient value of x you can use to find B? What is the value of B?

Confirm that this method agrees with the method from the book.

Quiz (Leave this space blank)