Section 8.4 Integration using Partial Fractions

When integrating fractions,

I. If denominator is one term and numerator is multiple terms, divide fraction into multiple fractions.

Example:

II. If denominator is multiple terms

 A. and power of numerator is equal or larger than denominator, use long division to turn

 improper fraction into a mixed number.

 Example:

B. If power of denominator is larger, rewrite the rational function as a sum of simpler fractions.

Review:

We want to go backwards.

 Step 1: factor denominator.

 Step 2: Rewrite as a sum using each factor.

 Step 3: Multiply by common denominator.

 Step 4: Let x be any value that will make a term equal zero. Then solve for A or B.

 Step 5: Choose a different value for x, and solve for the other variable.

 Step 6. Rewrite integral using A and B. Integrate.

 College Board my clean up answers using log rules.

Repeated Linear Factors:

Each factor will be written

Example:

**Practice**: (copied from 1999 Addison Wesley Longman p. 452)

Express the rational function as a sum of partial fractions.

1. 4. 5. 6.

Use partial fractions to evaluate the integral.

7. 8. 9. 10.

Answers on the back.