172 Homework 3 Name: _____

Integration by parts:

$$\int udv = uv - \int vdu$$

1. Simplest example:

$$\int x\sin(x)dx$$

   (a) Put $u =$ _____ and $dv =$_____

   (b) This makes $du =$_____ and $v =$ _____

   (c) Then the integral $\int x\sin(x)dx =$

2.

$$\int x^2\ln(x)dx$$

   (a) Put $u =$ _____ and $dv =$_____

   (b) This makes $du =$_____ and $v =$ _____

   (c) Then the integral $\int x^2\ln(x)dx =$

Questions 3 and 4 use the gimmick where $u = f(x), du = dx$

3.

$$\int \ln(x)dx$$

   (a) Put $u = \ln(x), dv = dx$

   (b) This makes $du =$_____ and $v =$ _____

   (c) Then the integral $\int \ln(x)dx =$

4.

$$\int \tan^{-1}(x)dx$$

(a) Put $u = \tan^{-1}(x), dv = dx$

(b) This makes $du =$_____ and $v =$ _____

(c) Then the integral $\int \tan^{-1}(x)dx =$

5. $\int x^3 e^{2x} dx$

The D-I method will make this snappy. Draw the table here.

6. $\int \cos(x) e^{2x} dx$

Again the D-I method makes this snappy, know when to stop and integrate!