Worksheet 7
Integration By Parts
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Recall we are using the reversal of the Derivative Product Rule (where it applies - not all of the problems are to be done with Integration By Parts (I. B. P.)):

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

1. Finish the problem from class (that Mr. McNally did) if you did not follow everything from the end of the discussion.

2. Find

A. $\int (x^2 + e^x)dx.$

B. $\int (e^{3x} \cdot e^x)dx.$

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

3. Consider

$$g : \mathbb{R} \longrightarrow \mathbb{R}, \qquad g(x) = x \cdot e^x$$

Find $\int g(x)dx$

4. A. Consider

$$f : \mathbb{R} \longrightarrow \mathbb{R}, \qquad f(x) = x^2 \cdot e^x$$

Find $\int f(x)dx$

B. Find $\int (x^2 \cdot e^x)dx$ (the same question as problem 4A).

5. Find $\int (\tan(x) \cdot (\cos(x))dx$

6. Find $\int \ln(x)dx.$

The rest of these problems are for the weekend or later:
Find:

7. $\int (e^x \cos(x))dx$

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

9. $\int (e^x \sinh(x))dx$

10. $\int (x\sqrt{x^2 + 7})dx.$

11. $\int (\tan(x))dx$

12. $\int (x^4(x^3 + 7x^2 - 1))dx.$

13. $\int (x \cdot \ln(x))dx$

14. $\int (\sec(x))dx.$