Integration By Parts Review

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First, what is our equation for doing integration by parts? (You can state it using u, v, du, and dv.)

Warm-up problems: These problems are straight-forward integration by parts problems.

1. $\int \sqrt{x} \ln(x)\, dx$

2. $\int x^2 \cos(x)\, dx$

The next few problems will be a little more complicated...

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

4. For this problem, we will find the volume of a solid two ways. Consider the region enclosed by the curves

$$y = e^{1-x^2} \qquad y = 1 \qquad x = 0$$

lying in the first quadrant.

(a) Sketch this region.

(b) Find the volume of the solid obtained by rotating this region about the y-axis using disks/washers (slices).

(c) Find the volume of the solid obtained by rotating this region about the y-axis using cylindrical shells.