Instructor: Leo Goldmakher

**Williams College**
**Department of Mathematics and Statistics**

# MATH 140 : Calculus II

## Problem Set 17 – due Thursday, April 30th

**INSTRUCTIONS:** This assignment must be turned in by email on Thursday at **9am** EDT (that's morning in Williamstown) by going to

`https://bit.ly/2RRu2aV`

You may submit photos or scans of your written work; please make sure your name appears on each page. (You can also try using the `scratchwork` app: `https://app.scratchwork.io/` to write up your HW.) Be prepared to discuss these problems in your upcoming small group meeting.

**First:** Watch this video introducing the idea of integration by parts. Then read this explanation up through Practice Set 2, which you don't have to read. (In other words, just learn about integration by parts for *indefinite* integrals.)

**Second:** Evaluate the following integrals using integration by parts. Once you've tried the example on your own, click on it to watch a video solution.

**17.1** $\int x \cos x \, dx$

**17.2** $\int \ln x \, dx$

**17.3** $\int x^2 e^x \, dx$

**17.4** $\int e^x \cos x \, dx$

**Third:** Evaluate the following integrals:

**17.5** $\int e^x \sin x \, dx$

**17.6** $\int (\ln x)^2 \, dx$

**17.7** $\int x^2 \sin \pi x \, dx$