

Instructor: Leo Goldmakher

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

**MATH 140 : Calculus II**

**Problem Set 19 – due Thursday, May 7th**

**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.

*Evaluate the following:*

**19.1**  $\int_0^{\pi/8} 5 \sin^3 4x \cos 4x \, dx$  [Ans:  $\frac{5}{16}$ ]

**19.6**  $\int \frac{e^{5t} - e^{2t} + e^t}{2e^t - 1} \, dt$

**19.2**  $\int (2 - x)^2 \ln(4x) \, dx$

**19.7**  $\int_0^1 x^3(1 - x^2)^{17} \, dx$  [Ans:  $\frac{1}{684}$ ]

**19.3**  $\int_0^2 (2 + 5x) e^{\frac{1}{3}x} \, dx$  [Ans:  $39 - 9e^{2/3}$ ]

**19.8**  $\int (3t + t^2) \sin(2t) \, dt$

**19.4**  $\int_0^4 x\sqrt{4 - x} \, dx$  [Ans:  $\frac{128}{15}$ ]

**19.9**  $\int x(x + 1)^{18} \, dx$

**19.5**  $\int_0^{\pi/4} x^2 \cos(4x) \, dx$  [Ans:  $-\frac{\pi}{32}$ ]