MAT137 - Calculus with proofs

- Test 3 opens on February 5.

Unit 9: Integration methods

- Substitution   or   Chain Rule
  (Videos 9.1, 9.3;   Supplementary: 9.2)

- TODAY: Parts   or   Product Rule
  (Video: 9.4;   Supplementary: 9.5, 9.6)

- NEXT: Products of trig functions
  (**Video: 9.7**;   Supplementary: 9.8, 9.9)

- Rational functions
  (Video: 9.10;   Supplementary: 9.11, 9.12)

Computation practice: Integration by parts

Use integration by parts (possibly in combination with other methods) to compute:

1. $\int x e^{-2x}\, dx$

2. $\int x^2 \sin x\, dx$

3. $\int \ln x\, dx$

4. $\int \sin \sqrt{x}\, dx$
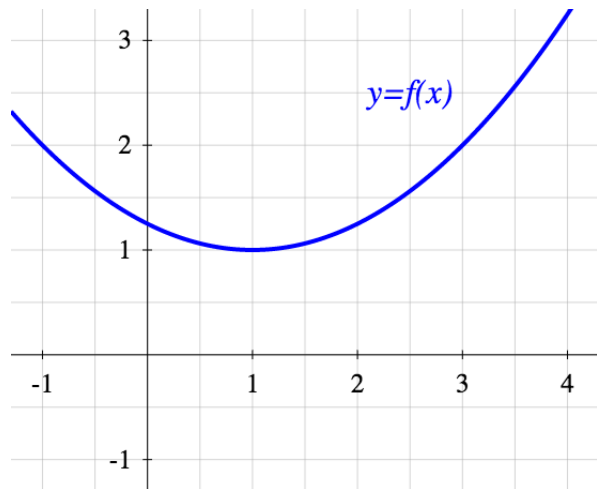
5. $\int x \arctan x\, dx$

6. $\int x^2 \arcsin x\, dx$

7. $\int e^{\cos x} \sin^3 x\, dx$

8. $\int e^{ax} \sin(bx)\, dx$

Integrals from a graph

Estimate:

1. $\displaystyle\int_0^1 f(x)\,dx$

2. $\displaystyle\int_0^1 f'(x)\,dx$

3. $\displaystyle\int_0^3 x\,f'(x)\,dx$

4. $\displaystyle\int_0^1 f(3x)\,dx$