

*University of Lethbridge*  
Department of Mathematics and Computer Science  
**MATH 2565 - Tutorial #6**  
Thursday, February 8

First Name: \_\_\_\_\_

Last Name: \_\_\_\_\_

**Additional practice** (don't include your solutions here):

1. Find the area of the surface obtained by revolving  $y = \sqrt{x}$ , for  $x \in [0, 1]$ , about the  $x$ -axis.
2. Verify that  $x = Ce^{-t} + De^{2t}$  is a solution to  $x'' - x' - 2x = 0$ .
3. Find the solution from Problem 2 that satisfies  $x(0) = 3$  and  $x'(0) = -2$ .
4. Solve  $y' = y^3$  when  $y(0) = 1$ . (Hint:  $\frac{1}{y'} = \frac{dx}{dy}$ .)
5. Solve  $\frac{dx}{dt} = x \sin(t)$  for  $x(0) = 1$ .

1. Find the area of the surface obtained by revolving  $y = x^2$ , for  $x \in [0, 1]$ , about the  $y$ -axis.

2. Find the area of the surface obtained by revolving  $x = 1 + 2y^2$ ,  $1 \leq y \leq 2$ , about the  $x$ -axis.