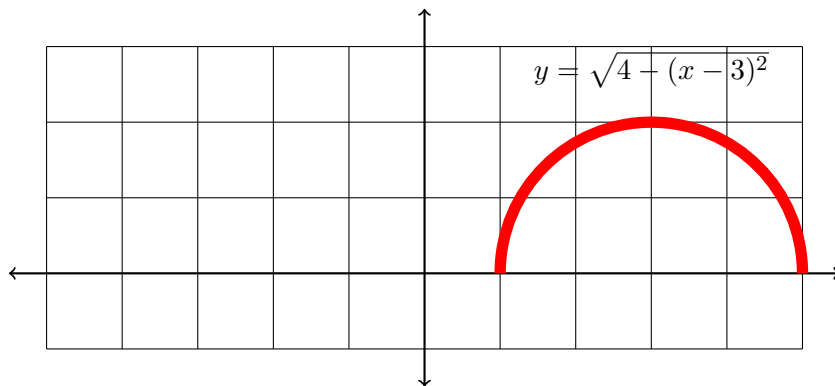


# Quiz 3, Calculus 2 – Regular

Dr. Adam Graham-Squire, Spring 2020

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

1. (3 points) Consider solid created by taking the area between the curve  $y = \sqrt{4 - (x - 3)^2}$  and the  $x$ -axis, and rotating about the  $y$ -axis (see graph below). Answer the following questions about this volume of revolution problem:
- (a) Explain why it is better to use cylindrical shells to calculate the volume than the washer/disc method.
- (b) Set up, but do NOT integrate, an integral to calculate the volume described above (using shells).



2. (3 points) A 2000 pound elevator is suspended by a 100 foot rope that weighs 5 pounds per foot. Set up, but do not integrate, an integral to represent the amount of work necessary to lift the elevator 30 feet up.

3. (4 points) Determine if the series converges or not. If the series converges, calculate the sum (if possible).

(a) 
$$\sum_{n=0}^{\infty} \frac{(-8)^n}{5(6^{n+1})}$$

(b) 
$$\sum_{n=1}^{\infty} \left( \frac{2}{n} - \frac{2}{n+2} \right)$$