

Math 211, Sp22 Cal.

Test 5

Name \_\_\_\_\_

SHOW ALL STEPS FOR FULL CREDIT. Closed books/notes/web.

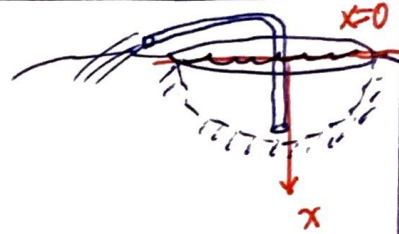
- 1 Find the volume of the 'egg' created by rotating the area between  $y^2 = x$  and  $x = 3 - 2y^2$  about the  $x$ -axis using (a) washers (disks)

(10pts)

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10pts 1 (b) Find the volume of the 'egg' created by rotating the area between  $y^2 = x$  and  $x = 3 - 2y^2$  about the x-axis using cylindrical shells

- 2 What is the work needed to drain a  $\frac{1}{2}$  spherical pool of radius  $R$ , whose equator is at ground level, and the water, density  $\rho$ , is drained onto the ground. {set up but do not solve}



3<sup>(a)</sup> Find the mean value of the function

10pts  $f(x) = 3 \sin(2x)$  between  $x=0$  and  $x=\pi/2$

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(b) Evaluate the integral  $\int e^x \sqrt{1+e^x} dx$

4 (a) differentiate  $y = e^{9x/2}$   
10pts

(b) diff 't  $y = \frac{e^{-x} + 1}{e^x}$

(c) Find the tangent line to  $f(x) = 6e^{8x}$  @  $(0, 6)$

The end