4. Do WebAssign 7.7. Remember that the WebAssign will be reopened three days before Exam II for you to review the problems. You will be allowed to improve your score by a maximum of three points. Additional attempts on the problems will not be given.

Use the comparison test to determine whether the integrals converge or diverge.
(Do not calculate the integral).

5. $\displaystyle\int_1^\infty \frac{dx}{x^3+1}$

6. $\displaystyle\int_1^\infty \frac{1}{\sqrt{y^2+1}}dy$

7. $\displaystyle\int_0^1 \frac{10}{\sqrt{z^3+z}}\,dz$

8. $\displaystyle\int_\pi^\infty \frac{2-\sin(\phi)}{\phi^2}\,d\phi$

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9. For what values of p does the integral converge/diverge.

$$\int_2^\infty \frac{dx}{x\,[\ln(x)]^p}\,dx$$

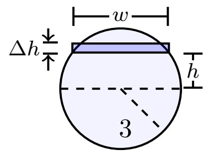
Areas and Volumes

Section 8.1
September 27, 2016

Name:
Math 129 - 01

Understand	Given a stack of slices, correctly identify the variable that will be used for integration.
Understand	Given a stack of slices, correctly identify the area or volume of the approximating shapes.
Apply	Express the approximate area or volume of the slices in terms of the variable of integration.
Apply	Express the approximate area (or volume) or a stack of slices in the form of a Riemann Sum.
Apply	Express the exact area (or volume) as a definite integral by taking a limit.
Apply	Idenify the correct bounds of the definite integral

In this problem, we will demonstrate how to calculate the exact area of a circle by slicing *horizontally*.



The horizontal edges of each slice are straight, but the vertical edges are curved. Explain why the curved walls can be approximated by straight lines.

1. Express the approximate area of the shaded slice in terms of w and Δh.

2. The slices will be stacked in the same direction of h, use the fact that a $h^2 + (\frac{w}{2})^2 = 3^2$ to express the area of the rectangle in terms of h and Δh.

3. Write a Riemann sum to approximate the total area or the circle by stacking rectangles.

4. Write your Riemann sum as a definite integral by taking the limit as the number of height of each slice goes to zero (or simultaneously, as the number of slices goes to infinity).

(Make sure the bounds on the definite integral are correct, they should be -3 and $+3$.)

Quiz (Leave this space blank)