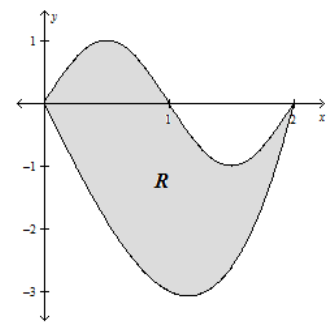


AP Calculus
Unit 7 – Advanced Integration & Applications

Day 5 Notes: Finding the Area between Two Curves

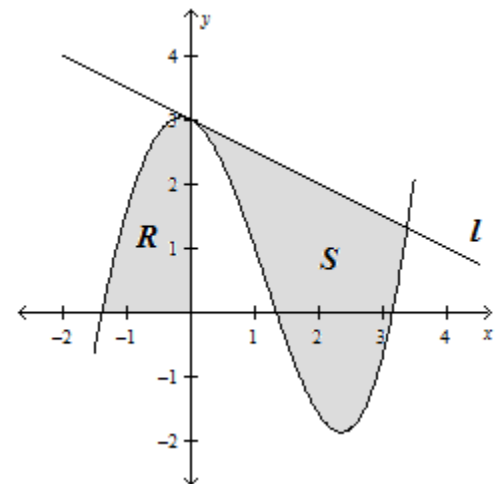
AREA BETWEEN TWO CURVES:

Example 1: Find the area of the shaded region, R , that is bounded by $y = \sin(\pi x)$ and $y = x^3 - 4x$.



Example 2: Pictured to the right is the graph of $f(x) = \frac{x^3}{4} - \frac{x^2}{3} - \frac{x}{2} + 3\cos x$ and a line, l , which is tangent to $f(x)$ at the point $(0, 3)$.

Find the area of Region R .



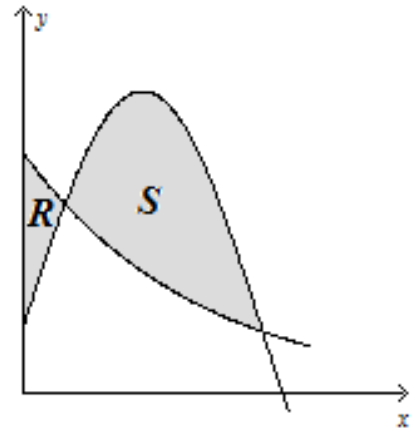
Find the equation of line l if it is tangent to the graph of $f(x)$ at $(0, 3)$.

At what ordered pair, other than $(0, 3)$, does the graph of line l intersect the graph of $f(x)$?

Find the area of Region S .

Example 3: Pictured to the right are regions R and S, which are formed by the graphs of $f(x) = \frac{1}{4} + \sin(\pi x)$ and $g(x) = 4^{-x}$

Identify the points of intersection of $f(x)$ and $g(x)$.



Find the area of Region R.

Find the area of Region S.

Find the area of the unshaded region bounded by the graphs of f , g , and the x – axis.