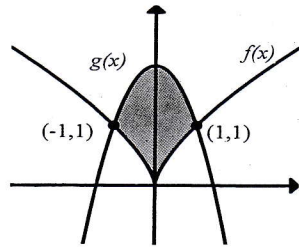


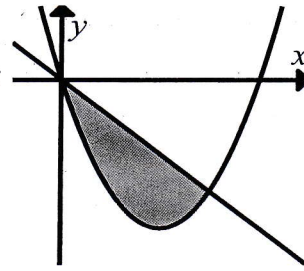
Assignment 8-2

For Problems 1 and 2, set up integrals that could be used to find the areas of the shaded regions. Do not integrate. Show the equation(s) used to find the limits of integration for Problem 2 without using a calculator.

1. $f(x) = x^{\frac{2}{3}}$
 $g(x) = -x^2 + 2$
 $A = \int_{-1}^1 \underline{\hspace{2cm}}$

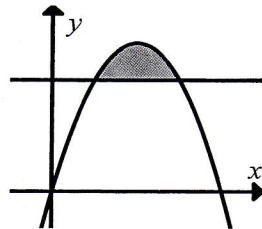


2. $f(x) = x^2 - 4x$
 $g(x) = -x$

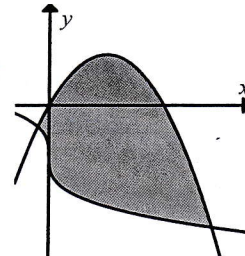


For Problems 3 and 4, show equations used to find the limits of integration, show integral set ups for the areas of the shaded regions, and then find the areas.

3. No calculator.
 $f(x) = 3$
 $g(x) = 4x - x^2$



4. Use a calculator.
 $f(x) = 2x - x^2$
 $g(x) = -\sqrt[3]{x} - 1$



For Problems 5 and 6, sketch regions bounded by the graphs of the given equations, show equations used to find the limits of integration, show integral set ups, and find the areas.

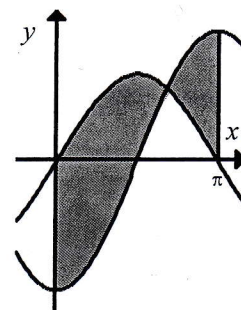
5. Use a calculator.
 $y = 3^t$
 $y = \sqrt{t+2}$

6. No calculator. Hint: Write as functions of y . (Isolate x)
 $x = y^2 - 3$ $y = -\frac{1}{2}x$

7. Without using absolute value, why can't the area of the region(s) bounded by $y = -4x$ and $y = -x^3$ be written as a single integral using -2 and 2 as limits of integration? (Sketch graphs of $y = -4x$ and $y = -x^3$ in one coordinate plane before you answer this question.) Then use the symmetry of the graphs to write a single integral for the area.

8. Without using a calculator, sketch a graph showing one of the regions bounded between $y = \cos x$ and $y = 2 - \cos x$. Then find the area of the region.

9. Use a calculator to find the shaded area between the curves $f(x) = 2 \sin x$ and $g(x) = -3 \cos x$ on $[0, \pi]$ as shown at right. Show an integral set up and express your final answer to 3 or more decimal place accuracy.



10. The graph of a function f is shown in the figure at right.

- Evaluate $\int_1^7 f(x) dx$.
- Determine the average value of the function on the interval $[1, 7]$.
- Determine the answers to Parts a. and b. if the graph is shifted two units upward.

