More Chapters 6 and 7 Review

Solve the following separable differential equation with the initial condition $y(4) = 0$

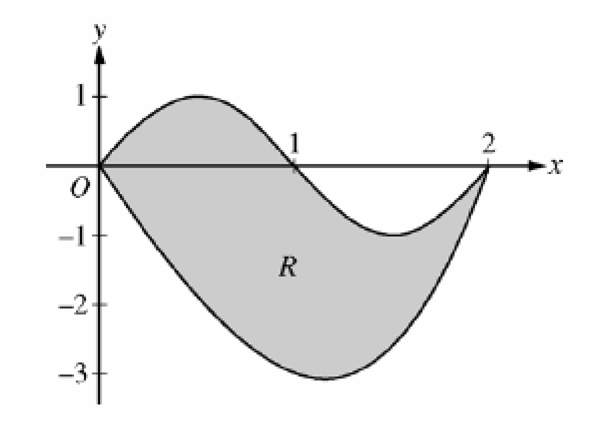
$$\frac{dy}{dx} = \frac{x}{-\sin y}$$

Solve the following separable differential equation with the initial condition

$$\frac{dy}{dx} = 4x^3 e^{-3y}$$

Find the particular solution to the separable differential equation $\frac{dy}{dx} = \frac{y-2}{2x}$ with the initial condition $f(e) = 3$

More fun with 2008AB1



$y = \sin(\pi x)$ and $y = x^3 - 4x$

(a) Let R be the base of a solid whose cross sections are semi-circles. For this solid, each cross section is perpendicular to the x-axis. Find the volume of this solid.

(b) Set up, but do not integrate, an expression to find the volume of the solid formed when R is rotated about the horizontal line y=3

(c) The vertical line x=k splits the region R into two parts of each area. Write, but do not evaluate an integral expression to represent this. [Need to have “k”]

(d) Set up, but do not integrate, an expression to find the volume of the solid formed when the region bounded by

$y = \sin(\pi x)$ on $0 \leq x \leq \dfrac{\pi}{2}$ is rotated [revolved] about the

y-axis.

2008 AB1B [calculator]

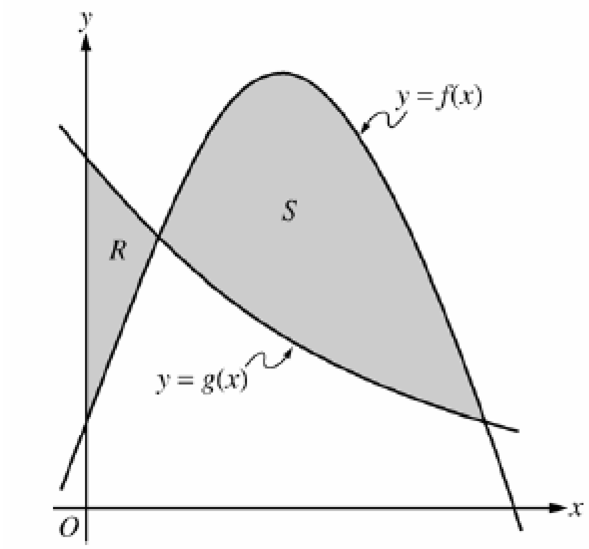
Let R be the region in the first quadrant bounded by the graphs of $y=\sqrt{x}$ and $y=\frac{x}{3}$

(a) Find the area of R

(b) Find the volume of the solid generated when R is rotated about the vertical line $x=-1$

(c) The region R is the base of a solid. For this solid, the cross sections perpendicular to the $y-$axis are squares. Find the volume of this solid.

2005 AB1 [calculator]



Let f and g be the functions given by $f(x) = \frac{1}{4} + \sin(\pi x)$ and $g(x) = 4^{-x}$. Let R be the region in the first quadrant enclosed by the $y-$axis and the graphs of f and g, and let S be the shaded region in the first quadrant enclosed by the graphs of f and g as shown above.

(a) Find the area of R

(b) Find the area of S

(c) Find the volume of the solid generated when s is revolved about the horizontal line $y = -1$