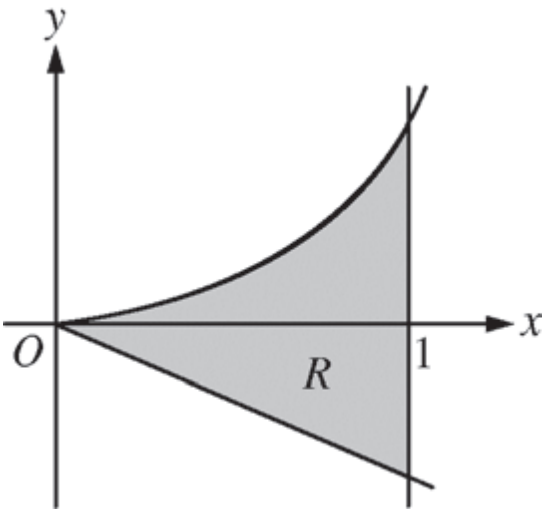
Area between Curves

2014 BC5



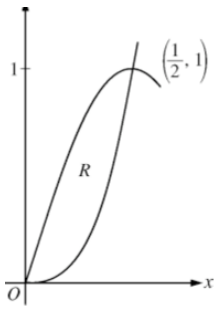
5. Let R be the shaded region bounded by the graph of $y = xe^{x^2}$, the line y = -2x, and the vertical line x =1, as shown in the figure above.

   a) Find the area of R.

2011 AB #3

Let R be the region in the first quadrant enclosed by the graphs of $f(x) = 8x^3$ and $g(x) = \sin(\pi x)$, as shown in the figure.

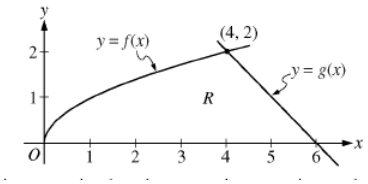
Find the area of R.



2011 BC Form B

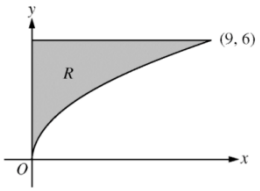
The functions f and g are given by $f(x) = \sqrt{x}$ and g(x) = 6 – x. Let R be the region bounded by the x-axis and the graphs of f and g, as shown in the figure above.

a) Find the area of R



2010 #4

Let R be the region in the first quadrant bounded by the graph of y = $2\sqrt{x}$, the horizontal line y = 6, and the y-axis, as shown in the figure.

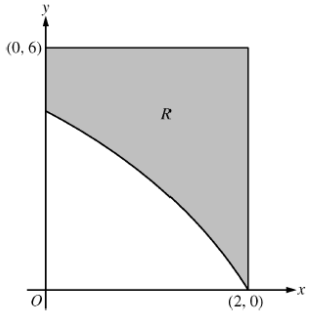


Find the area of R.

2010 Form B BC1

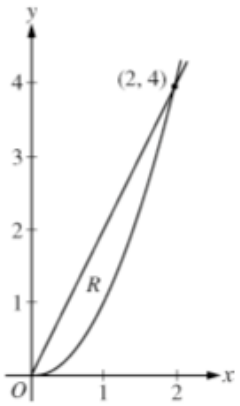
In the figure, R, is the shaded region in the first quadrant bounded by the graph y = 4ln(3 – x), the horizontal line y = 6, and the vertical line x = 2.

a. Find the area of R



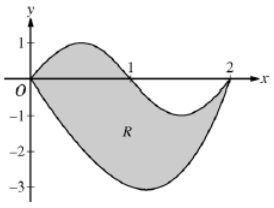
2009 AB#4

Let R be the region in the first quadrant enclosed by the graphs of $y = 2x$ and $y = x^2$, as shown in the figure.



Find the area of R.

2008 BC1



Let R be the region bounded by the graphs of $y = \sin(\pi x)$ and $y = x^3 - 4x$, as shown in the figure.

a. Find the area of R.

b. The horizontal line $y = -2$ splits the region R into two parts. Write, but do not evaluate, an integral expression for the area of the part of R that is below the horizontal line.

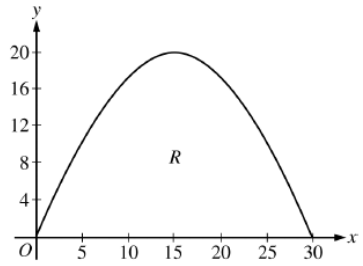
83. What is the area enclosed by the curves $y = x^3 - 8x^2 + 18x - 5$ and $y = x + 5$.

A) 10.667 B) 11.8333 C) 14.583 D) 21.333 E) 32

2009 Form B BC1

A baker is creating a birthday cake. The base of the cake is the region R in the first quadrant under the graph of y = f(x) for $0 \le x \le 30$, where $f(x) = 20\sin\left(\frac{\pi x}{30}\right)$. Both x and y are measured in centimeters. The region R is shown in the figure above. The derivative of f is $f'(x) = \frac{2\pi}{3}\cos\left(\frac{\pi x}{30}\right)$.

b. The region R is cut out of a 30-centimeter-by-20-centimeter rectangular sheet of cardboard, and the remaining cardboard is discarded. Find the area of the discarded cardboard.



2010 BC5 (Form B) No Calculator

Let f and g be the functions defined by $f(x) = \frac{1}{x}$ and $g(x) = \frac{4x}{1+4x^2}$, for all x > 0.

a) Find the area of the unbounded region in the first quadrant to the right of the vertical line x =1, below the graph of f, and above the graph of g.

2007 BC 1

Let R be the region in the first and second quadrants bounded above the graph of $y = \frac{20}{1+x^2}$ and below by the horizontal line y = 2.

a. Find the area of R.

2007 Form B BC 1

Let R be the region bounded by the graph of $y = e^{2x-x^2}$ and the horizontal line y = 2, and let S be the region bounded by the graph of $y = e^{2x-x^2}$ and the horizontal line y = 1 and y = 2, as shown in the graph.

a. Find the area of R.
b. Find the area of S.