SI Session: Exam I Review
Monday July 21st
12:35 PM – 2:35PM
Room 1229

Prof. Stockton : Calculus II
Summer II 2008
SI Leader : Neil Jody

[1] Evaluate each integral.

(a) $\int \frac{\cos x}{\sin x \sqrt{\sin^2 - 9}}\, dx$

(b) $\int \frac{e^x}{16 + e^{2x}}\, dx$

(c) $\int \frac{6}{\sqrt{5-2x-x^2}}\,dx$

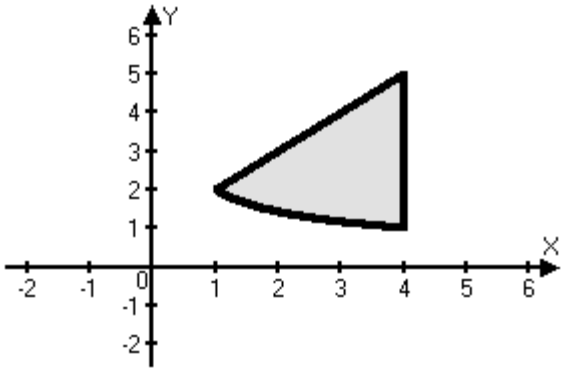
[2] Find each derivative. There is no need to simplify the result.

(a) $f\left(x\right)=\cos^{-1}\left(x^2-3x\right)$

(b) $f\left(x\right)=x\arctan\left(3x\right)$

[3] Let R denote the region in the xy-plane bounded by the graphs of the following equations:

$y = \frac{2}{\sqrt{x}}$, $y = x + 1$, and $x = 4$ (see figure).



For each of the following, write down an integral representing the *volume* of the solid obtained by revolving R about the indicated line.

(a) the $x-axis$

(b) the $y-axis$

(c) the line $x = 5$

(d) the line $x = -1$

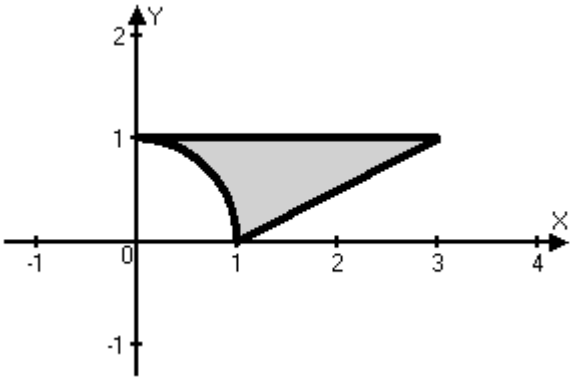
(e) the line $y = 5$

(f) the line $y = -1$

[4] Let R denote the region in the xy-plane bounded by the graphs of the following equations:

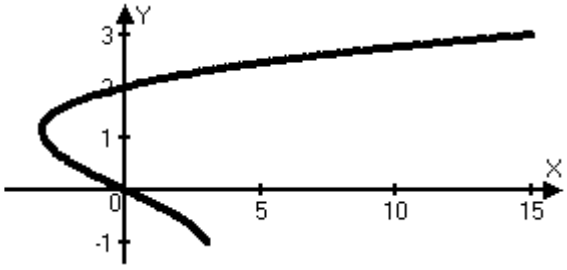
$x - 2y = 1$, $y = \sqrt{1 - x^2}$, and $y = 1$ (see figure)

Write down an integral that represents the *area* of R.

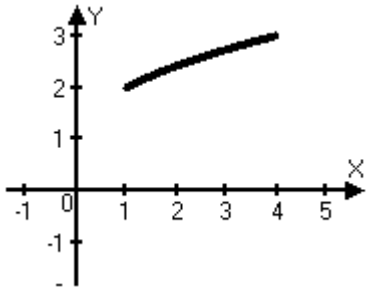


[5] Let C denote the portion of the graph $x = y^3 - 4y$ for $-1 \le y \le 3$.

Write down an integral representing the *length* of C (see figure).



[6] Let C denote the portion of the graph $y = \sqrt{x} + 1$ for $1 \le x \le 4$ (see figure).



For each of the following, write down an integral that represents the *surface area* of the surface obtained by revolving C about the indicated line:

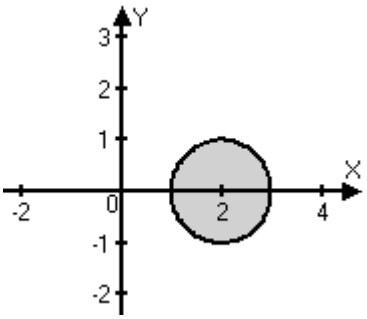
(a) the $x-axis$

(b) the $y-axis$

(c) the line $x = 5$

(d) the line $y = -1$

[7] Let R denote the region in the xy-plane inside the circle $(x-2)^2 + y^2 = 1$ (see figure).



For each of the following, write down an integral representing the *volume* of the solid obtained by revolving R about the indicated line.

(a) the $y-axis$

(b) the line $y = 1$

(c) the line $x = 4$

(d) the line $y = 3$