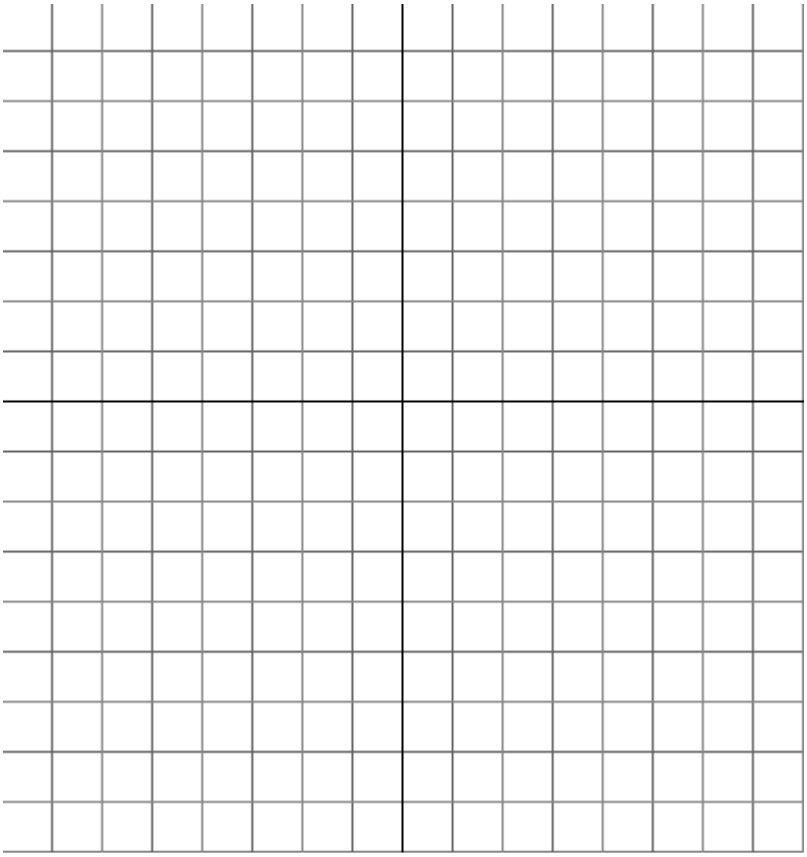
SI Session: July 17th , 2008
Mondays – Thursdays
12:35 PM – 2:05 PM
Room 1229

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

[1] Let R denote the region in the xy-plane bounded by the graphs of $y = \ln x$, $y = 1$, and $y = 1 - x$. For each of the following, write down an integral representing the volume of the solid obtained by revolving R about the indicated line:

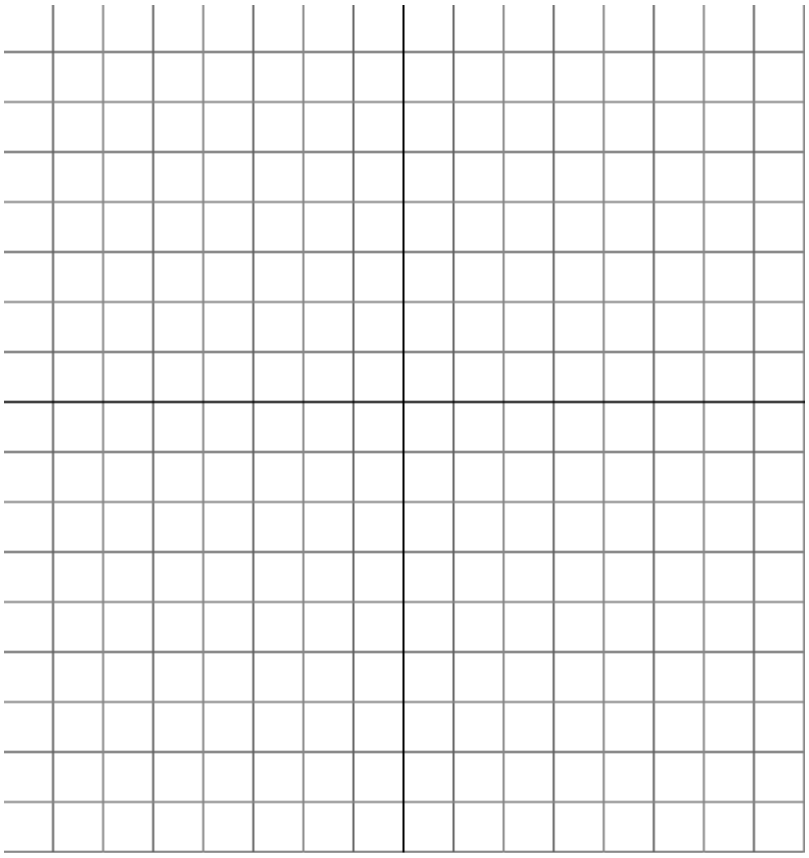
(a) the x-axis (b) the y-axis (c) the line $x = -2$

(d) the line $y = 2$ (e) the line $x = 4$ (f) the line $y = -1$



[2] Let C be the portion of the graph of $y = \cos x + 2$ corresponding to $\frac{\pi}{2} \le x \le \pi$. Write down an integral representing each of the following:

(a) the length of C
(b) the area of the surface obtained by revolving C about the x-axis
(c) the area of the surface obtained by revolving C about the y-axis
(d) the area of the surface obtained by revolving C about the line $x = 4$
(e) the area of the surface obtained by revolving C about the line $y = 3$
(f) the area of the surface obtained by revolving C about the line $x = -2$
(g) the area of the surface obtained by revolving C about the line $y = -1$



[3] Find the (arc) length of each curve.

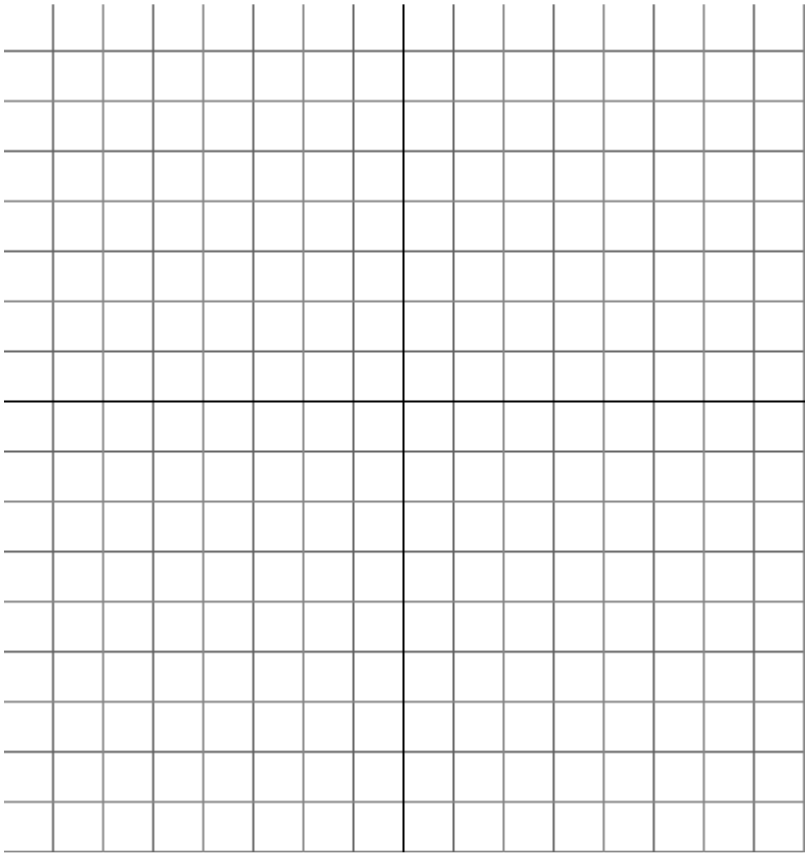
(a) The portion of the graph of $f(x) = 3x^{2/3} - 10$ from (8,2) to (27,17).

(b) The portion of the graph of $y = \frac{x^3}{12} + \frac{1}{x}$ from $x = 1$ to $x = 2$.

[4] Find the arc length of the graph of function over the indicated interval.

(a) $y = \ln(\cos x), \left[0, \frac{\pi}{3}\right]$

[5] Write a definite integral representing the volume of the solid generated by revolving the region bounded by the graphs of $y = \frac{10}{x^2}$, $y = 0$, $x = 1$, and $x = 5$ about the line $y = 10$.



[6] Evaluate each integral.

(a) $\int \frac{6}{\sqrt{x}(1+x)}\,dx$

(b) $\int \frac{1}{\sqrt{e^{2x}-16}}\,dx$

(c) $\int_2^3 \frac{1}{\sqrt{4x - x^2}}\, dx$

(d) $\int \frac{1}{x\sqrt{x^6 - 1}}\, dx$