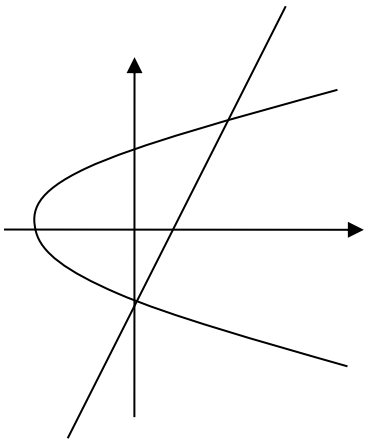
Math 141 **name**_____

Exam 1 B

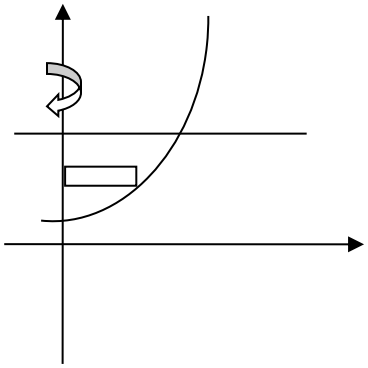
September 25, 2015

***no calculators**
***show all relevant work to receive full credit**
***any evidence of academic dishonesty = 0 grade**
***only pencils, pens = -5 from grade**
***late for exam= -5 from grade**

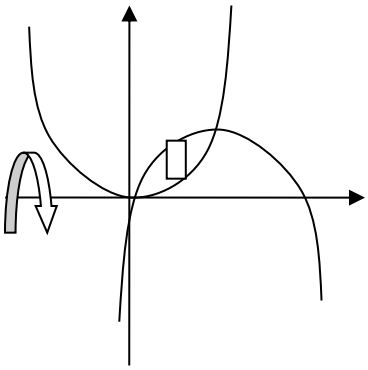
1. ***SET UP*** the definite integral to find the area of the region bounded by the graphs of $x = y^2 - 1$ and $x = y + 1$.



2. ***SET UP*** the integral to find the volume of the solid generated by rotating the region bounded by the graphs of $y = e^x$, $x = 0$, $y = 2$ about the *y*-axis using horizontal rectangles.



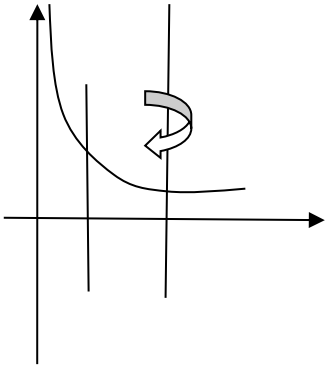
3. ***SET UP*** the integral to find the volume of the solid generated by rotating the region bounded by the graphs of $y = 2x - x^2$ and $y = x^2$ about the *x*-axis using vertical rectangles.



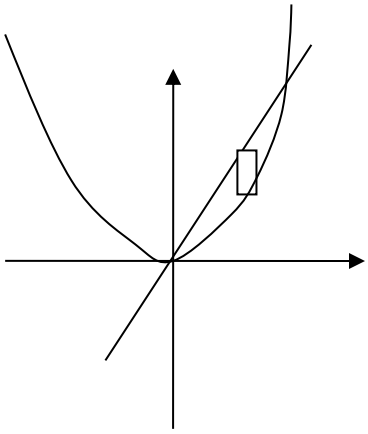
4. ***SET UP*** the integral to find the volume of the solid generated by rotating the region bounded by the graphs of $y = \frac{1}{x^2}$, $x = 1$, $x = 2$, and $y = 0$ about $x = 2$.

Indicate your choice of method by circling one of the following:

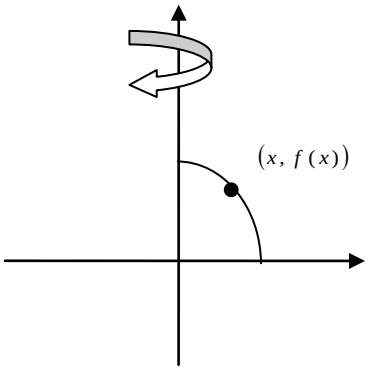
DISK ***WASHER*** ***SHELL***.



5. ***SET UP*** the integral to find the volume of the solid with <u>*square*</u> cross-sections taken perpendicular to the *x*-axis whose base is bounded by the graphs of $y = x^2$ and $y = 2x$.

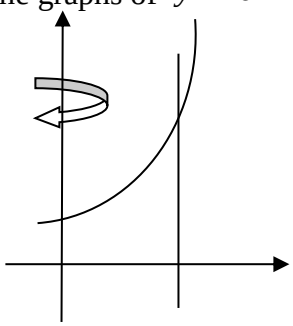


6. ***SET UP*** the integral to find the area of the *surface* formed by rotating the graph of the curve $y = 1 - x^2$ over $[0,1]$ about the *y*-axis.



7. Find the indefinite integral: $\int x \sin 2x \, dx$

8. Find the indefinite integral: $\int \ln x \, dx$

9. Find the indefinite integral: $\int \sin^5 x \cos^3 x \, dx$

10. ***FIND*** (don't just set it up) the volume of the solid, if the region bounded by the graphs of $y = e^x$ $x = 0$, $y = 0$, and $x = 1$ is rotated about the *y*-axis.