Volumes of Revolution Homework
AP Calculus

Name:_____

Draw all defined regions without the use of a calculator. Then use the calculator to find intersections and evaluate the problem.

(1) Region *R* is bounded by $y = x^2 - 3$, $x = 6$, and the *x*-axis. Find the volume when *R* is rotated around the line:

(A) $y = 6$ (B) $y = -2$ (C) $x = 6$ (D) $x = 1$

(2) Region *S* is bounded by the functions $y = \sqrt{x}$, $y = -\ln x$, and $x = 3$. Find the volume when *S* is rotated around the line:

(A) $y = 3$ (B) $y = -4$ (C) $x = 3$ (be careful)

(3) Region *T* is bounded by the graphs of $y = x^2$, $y = 0$, and $x = 4$.

(A) Find the value of *a* such that the line $x = a$ is divides *T* into two equal areas.

(B) If *T* is rotated about the *x*-axis, find the value of *b* such that the line $x = b$ divides the solid into two equal volumes.

(C) If *T* is rotated about the line $x = -1$, find the value of *c* such that the line $y = c$ divides that solid into two equal volumes.