

Math 180, Quiz 7 Retest: Tuesday, March 19, 2013

Take fifteen minutes to complete this quiz. Please show all your work, and write your name on the front *and* back of the paper before turning it in. Make sure to show all relevant work.

- (4 pts) Find the absolute extrema of $f(x) = x \ln(x) + 2$ on the interval $[e^{-2}, 1]$.
- (5 pts) A 5 m-long log rolls down a snow-covered mountain, forming a cylinder of constant height but increasing diameter. It accumulates snow at a rate of $1 \text{ m}^3/\text{s}$. How quickly is the diameter increasing when the snow-covered log is $1/3$ m across? (You probably want to work with radii first and then convert to diameters at the end.)
- (1 pt) Suppose f and f^{-1} are differentiable functions, and that you are given the values

x	$f(x)$	$f'(x)$
0	$3/2$	$1/2$
1	2	$1/2$
$3/2$	$19/8$	1
2	3	$3/2$
$5/2$	$31/8$	2
3	5	$5/2$

What is $(f^{-1})'(3/2)$? (Show at least enough work that I can tell you didn't just make a lucky guess!)