MATH 141, FALL 2013, MIDTERM 2
Problem 3

Part a.
The derivative, $f^{\prime}(x)=1+\frac{1}{2} \frac{1}{\sqrt{x}},(5 \mathrm{pt}$.
satisfies $f^{\prime}(x)>0$ on $(0, \infty)$. Then there is an inverse on the interval $(0, \infty)$, which includes $x=2$. ( 5 pt .)

The largest interval in which an inverse exists is $[0, \infty)$. (5 pt.)

Part b.

$$
\begin{equation*}
\left[f^{-1}\right]^{\prime}(c)=\frac{1}{f^{\prime}(a)} \tag{1}
\end{equation*}
$$

where $f(a)=c$, if $f$ is continuous near $a$. (5 pt.)
Then

$$
\begin{equation*}
\left[f^{-1}\right]^{\prime}(2)=\frac{1}{f^{\prime}(1)}=\frac{2}{3} \tag{2}
\end{equation*}
$$

(5 pt.)

