Name:
Directions: Show all work. No credit for answers without work.

1. [1 point] For $y=\ln (\sin (t))$, find $\frac{d y}{d t}$.
2. [1 point] Given $w=3 x y+x^{2}+\sin (x y)$, compute $\frac{\partial w}{\partial x}$ and $\frac{\partial w}{\partial y}$.
3. [2 points] Given $e^{t y}+y+t=0$, find $\frac{d y}{d t}$ in terms of $y$ and $t$.
4. [3 parts, 2 points each] Solve the following integrals.
(a) $\int t \cos \left(t^{2}\right) d t$
(b) $\int \frac{1}{x^{2}-4 x+3} d x$
(c) $\int t \ln t d t$
