Name: __

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

1. [1 point] For $y = \ln(\sin(t))$, find $\frac{dy}{dt}$.

2. [1 point] Given $w = 3xy + x^2 + \sin(xy)$, compute $\frac{\partial w}{\partial x}$ and $\frac{\partial w}{\partial y}$.

3. [2 points] Given $e^{ty} + y + t = 0$, find $\frac{dy}{dt}$ in terms of y and t.

4. [3 parts, 2 points each] Solve the following integrals.

(a)
$$\int t \cos(t^2) dt$$

(b)
$$\int \frac{1}{x^2 - 4x + 3} \, dx$$

(c)
$$\int t \ln t \, dt$$