Math 126B **Calculus With Analytic Geometry III** **Spring 1995**

PROFICIENCY QUIZ #3 SOLUTIONS

1. $f(y,z) = \sin(yz) + ze^y$ Find f_{yy}.

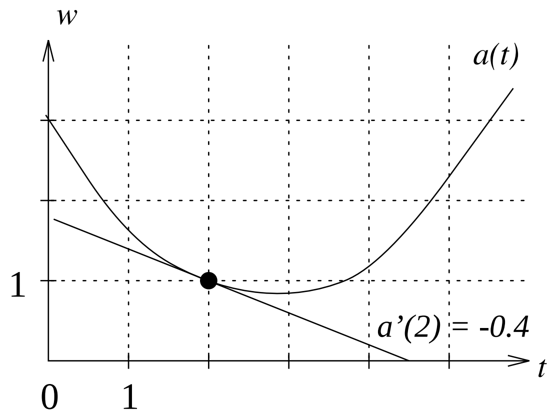
$$f_{yy} = \boxed{-z^2\sin(yz) + ze^y}$$

2. The function $b(u)$ is given by $b(u) = \sin u$. We define a new function $g(x,y)$ by $g(x,y) = b(x^2 - y^2)$. Find g_y.

$$g_y = \boxed{\cos(x^2 - y^2)(-2y)}$$

3. $f(x,y) = e^{x+y}$, and $a(t)$ is the function whose graph is shown below. Evaluate the derivative $\dfrac{df(a(t),a(t))}{dt}$ for $t = 2$. Your answer will be a number.

$$\frac{df(a(t),a(t))}{dt} = \boxed{2e^2(-0.4)}$$



4. We do not know the formula for $h(x,y)$. Find $\dfrac{\partial h(\sin u, \cos(uv))}{\partial u}$.

$$\frac{\partial h(\sin u, \cos(uv))}{\partial u} = \boxed{h_x(\sin u, \cos(uv))\cos u - h_y(\sin u, \cos(uv))v\sin(uv)}$$