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

PROFICIENCY QUIZ #2 SOLUTIONS

1. $g(u,v) = 3u^2v^2 + \sin v \cos u$. Find g_v.

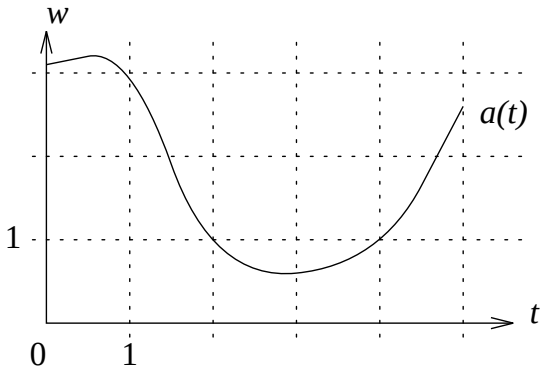
$$g_v = \boxed{6u^2v + \cos v \cos u}$$

2. The function $a(t)$ is given by its graph shown below. We define a new function $g(x,y)$ by $g(x,y) = a(x^3 + y^2)$. Find $g_x(1,\sqrt{3})$. Your answer will be a number.

$$g_x(1,\sqrt{3}) = \boxed{\text{approximately} \quad 3}$$

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

$$\frac{dh(a(t),3t)}{dt} = \boxed{\text{approximately} \quad 12 \cdot (-1) + 1 \cdot (3) = -9}$$



4. $f(x,y) = \sin x \cos y$. Find $\dfrac{\partial f(u^2, a(u,v))}{\partial v}$, where $a(u,v) = u + v^2$.

$$\frac{\partial f(u^2, a(u,v))}{\partial v} = \boxed{-\sin(u^2)\sin(u+v^2) \cdot 2v}$$