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

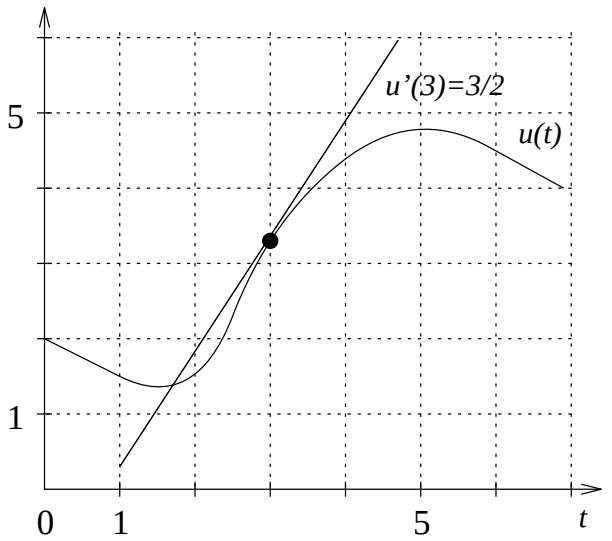
PROFICIENCY QUIZ #1 ANSWERS

1. $f(x,y,z) = \sin(xy^3)$. Find f_{xx}.

$$f_{xx} = \boxed{-\sin(xy^3)y^6}$$

2. The function $u(t)$ is given by its graph shown below. We define a new function $g(x,y)$ by $g(x,y) = u(x-y^2)$. Find $g_y(5,\sqrt{2})$. Your answer will be a number.

$$g_y(5,\sqrt{2}) = \boxed{\frac{3}{2}(-2\sqrt{2})}$$



3. Let $h(x,y)$ be a function of x and y whose formula we do not know.
Evaluate the derivative $\dfrac{dh(t^2+1,1-t)}{dt}$.

$$\frac{dh(t^2+1,1-t)}{dt} = \boxed{2th_x(t^2+1,1-t) - h_y(t^2+1,1-t)}$$

4. We are given that $f(x,y) = e^{x-y}$, $a(u,v) = \sin uv$, and $b(u,v) = u^2+v^2$. Find $\dfrac{\partial f(a(u,v),b(u,v))}{\partial u}$ when $(u,v) = (0,2)$. Your answer will be a number.

$$\frac{\partial f(a(u,v),b(u,v))}{\partial u} = \boxed{2e^{-4}}$$