

## Answers to Test 2, 1994

1. No. The function  $f(x, y)$  approaches the value 0 as  $(x, y)$  approaches  $(0, 0)$  along the  $y$ -axis. On the other hand,  $f(x, y)$  approaches the value  $1/2$  as  $(x, y)$  approaches  $(0, 0)$  along the line  $y = x$ . Hence, the limit cannot exist.
2.  $-5/\sqrt{10}$  (or  $-\sqrt{5/2}$ )
3.  $3x + 3y - 2z = 2$
4. 26
5.  $(3x^2y + y^2 - 1)e^{st} + (x^3 + 2xy)t^2e^{st}$
6. Global Maximum Value: 27  
Global Minimum Value:  $-21/2$
7. The critical point  $(1, 0)$  determines a local minimum.  
The critical point  $(1, 1)$  determines a saddle point.  
The critical point  $(1, 2)$  determines a local minimum.