

## Answers to Test 2, 1999

- (a) 9  
(b)  $\sqrt{106}$
- 0
- $(2x + yz + 1)(\sin(\sqrt{s}) - 2t) + xzs^2 \cos(t) + (xy + 2)(2ts^3 - 2)$
- $8x + 5y - z = 16$
- Maximum Value: 2  
Minimum Value:  $-2$
- Critical Points: the boundary points, that is  $(x, y)$  satisfying  $x^2 + y^2 = 9$   
Maximum Value: 16 at  $(2, \pm\sqrt{5})$   
Minimum Value:  $-16$  at  $(-2, \pm\sqrt{5})$
- The critical point  $(0, 0)$  determines a saddle point.  
The critical point  $(0, -4)$  determines a saddle point.  
The critical point  $(1, -2)$  determines a local minimum.