

## Answers to Test 2, Spring 2001

- (a)  $-56/5$   
(b)  $-13$
- $36x$
- $(3x^2y)(4u^3) + (x^3 - 2y)(-v \sin(uv))$
- $5x - 2y - 2z = 5$
- 12
- The critical points are  $(0, 0)$  and all  $(x, y)$  satisfying  $x^2 + y^2 = 9$ .  
The maximum value is 48 and it occurs at the points  $(2, \pm\sqrt{5})$ .  
The minimum value is  $-48$  and it occurs at the points  $(-2, \pm\sqrt{5})$ .
- The critical points are  $P = (1, -1)$  and  $R = (0, 0)$ .  
The point  $P$  determines a local maximum.  
The point  $R$  determines a saddle point.