Answers to Test 2, 1999

1. (a) 9
   (b) $\sqrt{106}$
2. 0
3. $(2x + yz + 1)(\sin(\sqrt{s}) - 2t) + xzs^2 \cos(t) + (xy + 2)(2ts^3 - 2)$
4. $8x + 5y - z = 16$
5. Maximum Value: 2
   Minimum Value: -2
6. Critical Points: the boundary points, that is (x, y) satsifying $x^2 + y^2 = 9$
   Maximum Value: 16 at $(2, \sqrt{5})$
   Minimum Value: -16 at $(-2, -\sqrt{5})$
7. 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.