Answers to Test 2, Fall 2001

1. No, \( f(x, y) \) approaches \(-3\) along the line \( x = 0 \) and \( f(x, y) \) approaches \( 0 \) along the line \( y = 0 \).

2. \( 12x - 12y \)

3. 5

4. 6

5. \( -x + 6y - 9z = 18 \)

6. \( (4/5, -3/5) \)

7. \( y \sin(xy) + z^2 - x \sin(xy) \)

8. The Global Maximum is 18 and it occurs at the points \((-1, \pm \sqrt{3})\) and \((2, 0)\). The Global Minimum is \(-14/27\) and it occurs at the point \((1/3, 0)\).

9. The critical point \((1, 0)\) determines a saddle point.
   The critical point \((-1, 0)\) determines a saddle point.
   The critical point \((-1, -1)\) determines a saddle point.
   The critical point \((-1/3, -1/3)\) determines a local maximum.