Section 1: Summary of Analysis

Section 2: Summary of Results

Section 3: Appendixes

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| **Point #** | **(x,y)** | **f(x,y)** | **A** | **B** | **C** | **D** | **Type of point** |
| 1 | (2.9191, -0.7505) | -1.2236 | 4.4893 | 0.7479 | 4.8363 | -21.1523 | Relative minimum |
| 2 | (3.5963, -2.0459) | 0.1796 | -0.7658 | 0.2415 | -1.4008 | 1.0145 | Relative maximum |
| 3 | (3.5551, 0.6003) | 1.5883 | -5.8771 | -0.5401 | -4.2213 | -24.5171 | Relative maximum |

The location with the maximum slope is at (3.25,-0.1) with a slope of 3.1208.

The temperature at the highest elevation is 12.5386 degrees Celsius. The temperature at the lowest elevation is 26.6727 degrees Celsius. The temperature at the point (4,-0.3) is 13.6988 degrees Celsius.

In the north west direction, the directional derivative is 1.3469, therefore he is ascending. In the south west direction, the directional derivative is -0.7912, therefore he is descending.

Using Lagrange Multipliers, the highest temperature is the point (2.9147, -0.7548, -1.2235). The temperature at this point is 26.6744 degrees Celsius.