1. Saddle point at (1, 4, 17) but this is outside the triangle, critical point at (9/10, 31/8, 341/20), absolute minimum at (4, 0, -31), absolute maximum at (0, 0, 33), additional corner point is (0, 5, 13)

2. Case 1: $\lambda = 0$ gives $x = -1, y = -1$, but this point does not satisfy the constraint.
   Case 2: $\lambda \neq 0$ gives $x = 0, y = 0, or x = y$. Both $x = 0$ and $y = 0$ do not satisfy the constraint; $x = y$ gives $x = y = \pm \sqrt{2}$. There is a maximum at $(\sqrt{2}, \sqrt{2}, 2 \sqrt{2})$ and a minimum at $(-\sqrt{2}, -\sqrt{2}, 2 - 2 \sqrt{2})$