

3. (4) Describe the level surfaces of $f(x, y, z) = \cos^{-1} \left(-\sqrt{7 - z + x^2 + y^2} \right)$. Be sure to include all important information which may apply, such as orientation (up/down/left/right), vertex, radius, etc.

4. (4) Describe (geometrically) the level surface of $g(x, y, z) = \ln \left(\frac{147 - z^2 + 2x^2 + 2y^2}{x^2 + y^2 + 1} \right)$ which contains the point $(-4, 8, -8)$.

5. (3) Describe the level set of $F(x, y, z) = \sqrt{xyz}$ which contains the point $(3, 0, -5)$.

6. (3) Is it possible for a level set of a function of three variables, $f(x, y, z)$ to consist of a single point? If it is possible, provide an example of such a function. If it is not possible, explain why not.