

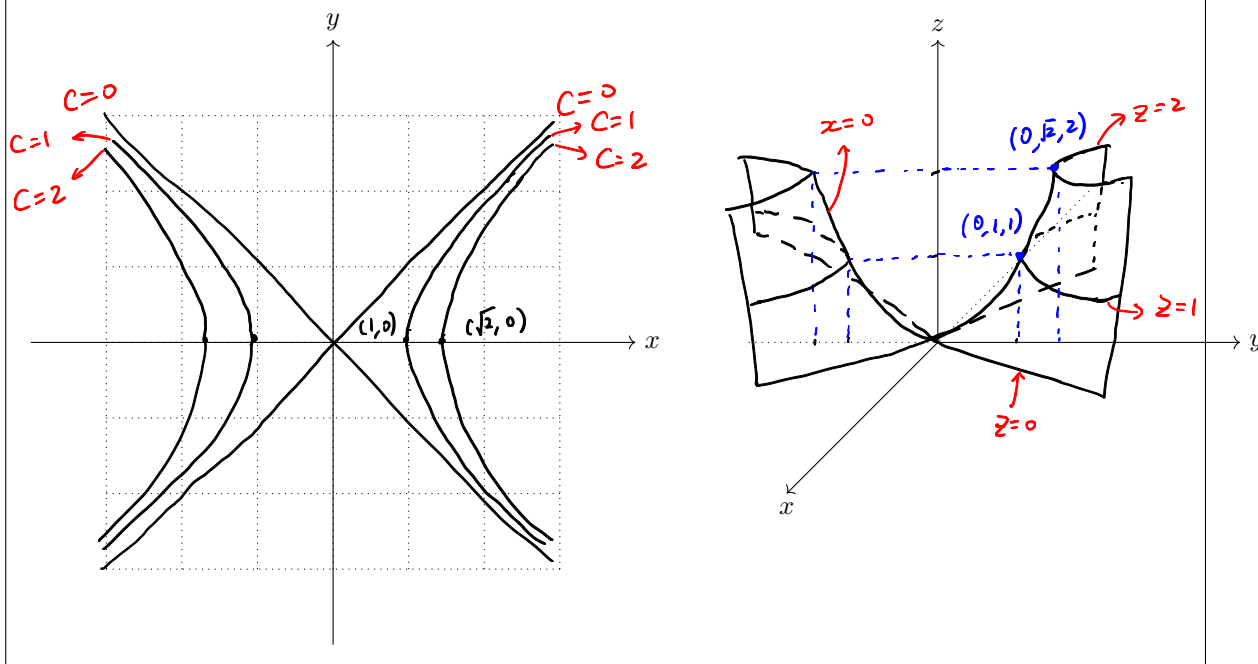
MATH 2E Prep: Level Sets and Surfaces

1. Sketch the level sets $x^2 - y^2 = C$ for $C = 0, 1, 2$ on xy -plane, then use the level sets to sketch the graph of $z = x^2 - y^2$ in $\mathbb{R}^3$.

Solution: $C = 0$, $x^2 - y^2 = 0$, same as $x - y = 0$ or $x + y = 0$, 2 lines.

$C = 1$, $x^2 - y^2 = 1$, hyperbola.

$C = 2$, $x^2 - y^2 = 2$, hyperbola.



2. Sketch the level set $x^2 + y^2 = 1$ in $\mathbb{R}^3$.

Solution:

