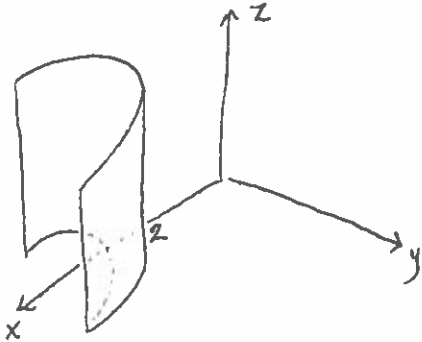
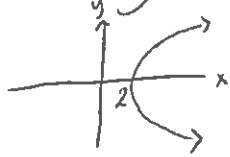


Show all work. Incomplete answers may receive little or no credit.

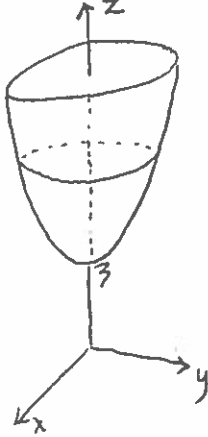
Sketch the following surfaces in \mathbb{R}^3 . Be sure to label your axes. What is the name of each surface?

1. $x = y^2 + 2$



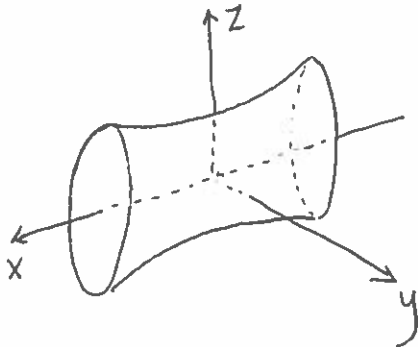
Notice this is a 'sideways' parabola. That is, you see  at each z-slice so this is a parabolic cylinder.

2. $z = x^2 + \frac{y^2}{4} + 3$



Notice for each z-slice ($z \geq 3$), we get a circle. This is a (elliptic) paraboloid.

3. $\frac{-x^2}{4} + \frac{y^2}{9} + \frac{z^2}{1} = 1$



Notice for each x-slice, we get a circle in the yz-plane. For each z-slice, we get hyperbolas. This is a hyperboloid of one sheet.