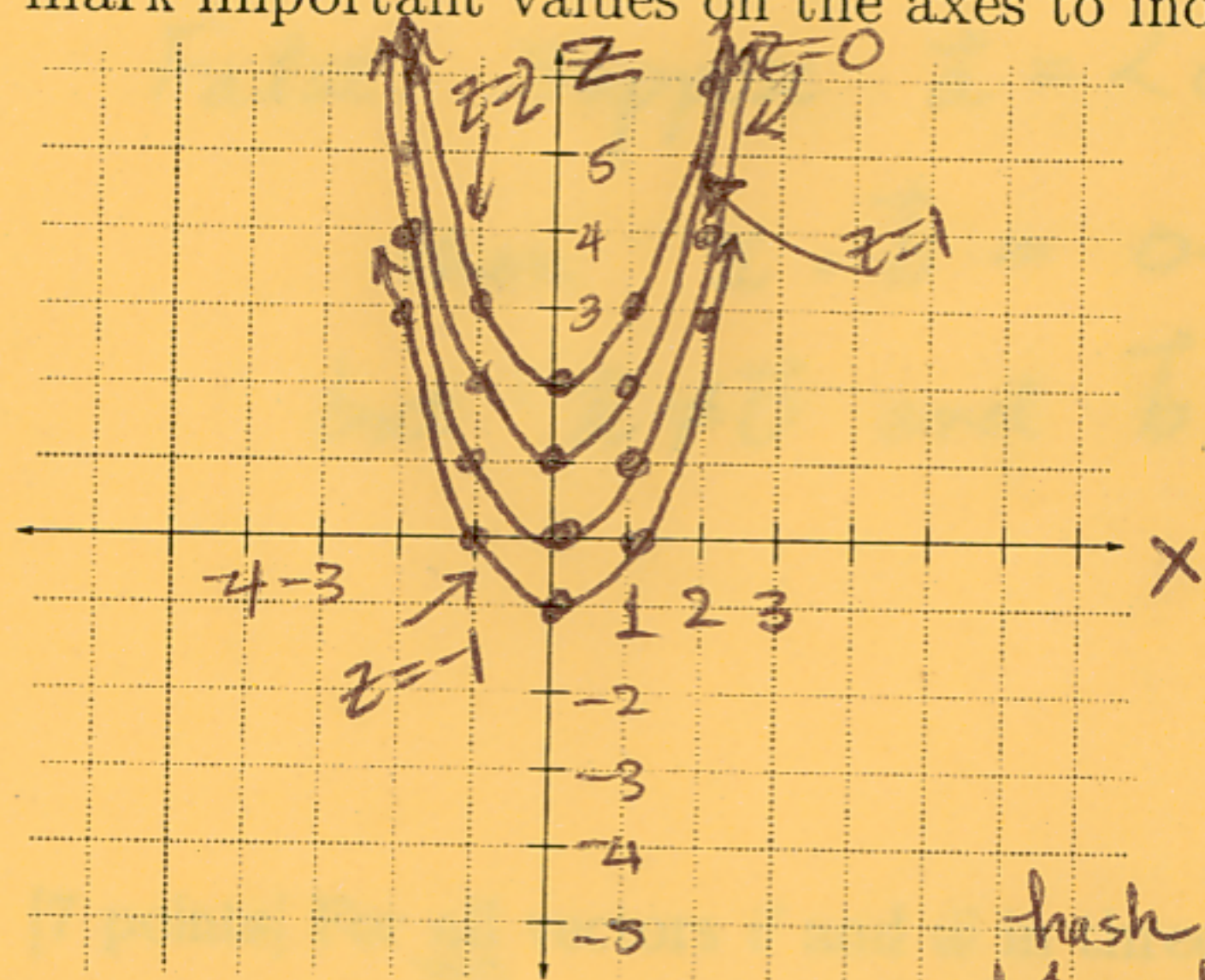


3. Let $z = y + x^2$.

(a) [12 points] Sketch at least 4 different y -traces below. Be sure to label the axes and mark important values on the axes to indicate the scale you've chosen.



$$y=0 \Rightarrow z=x^2$$

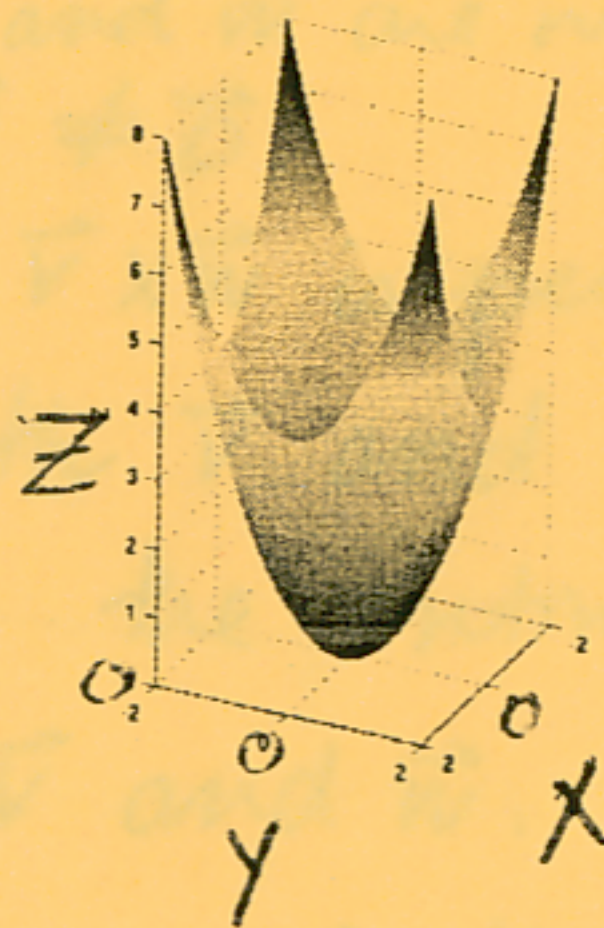
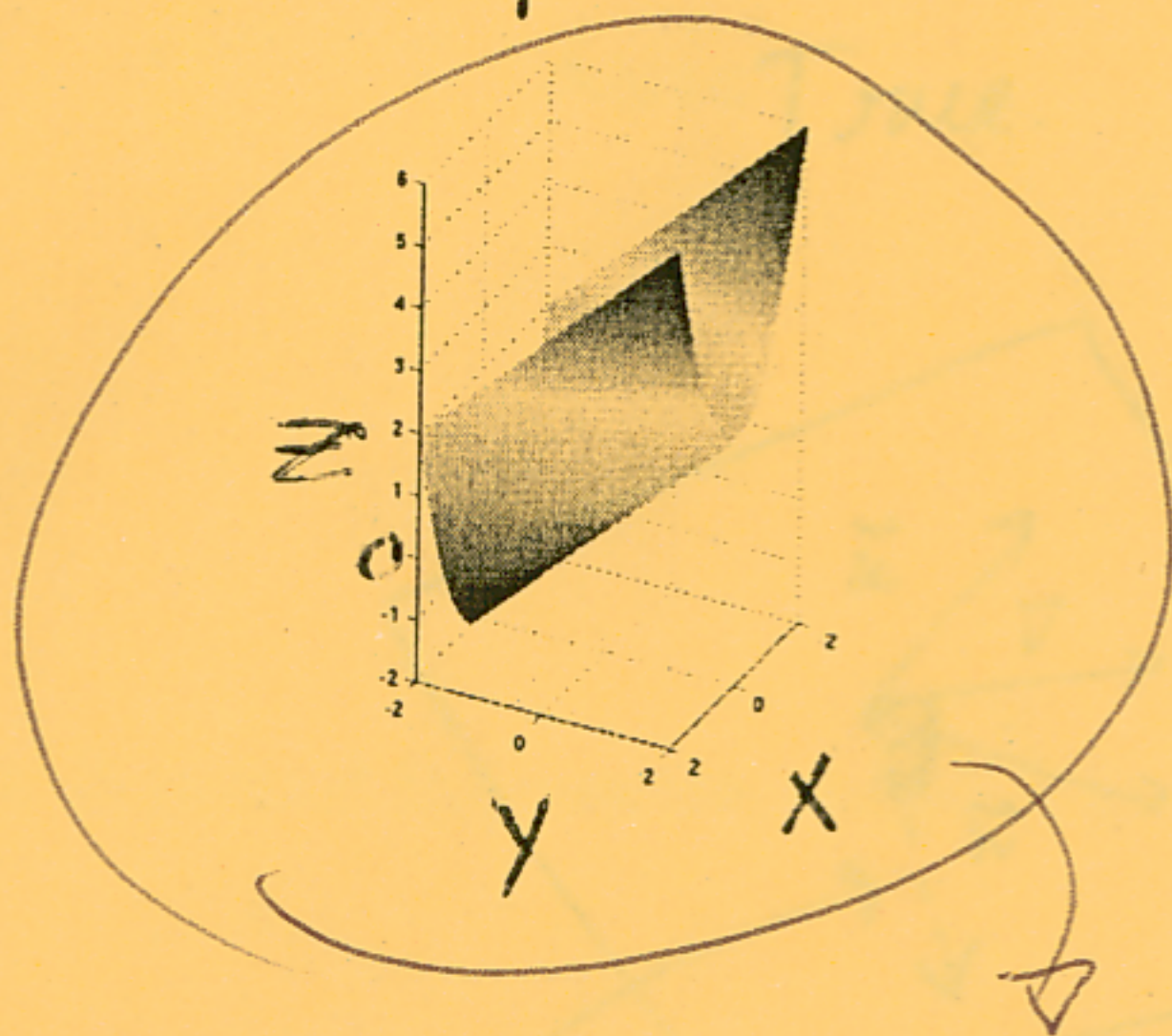
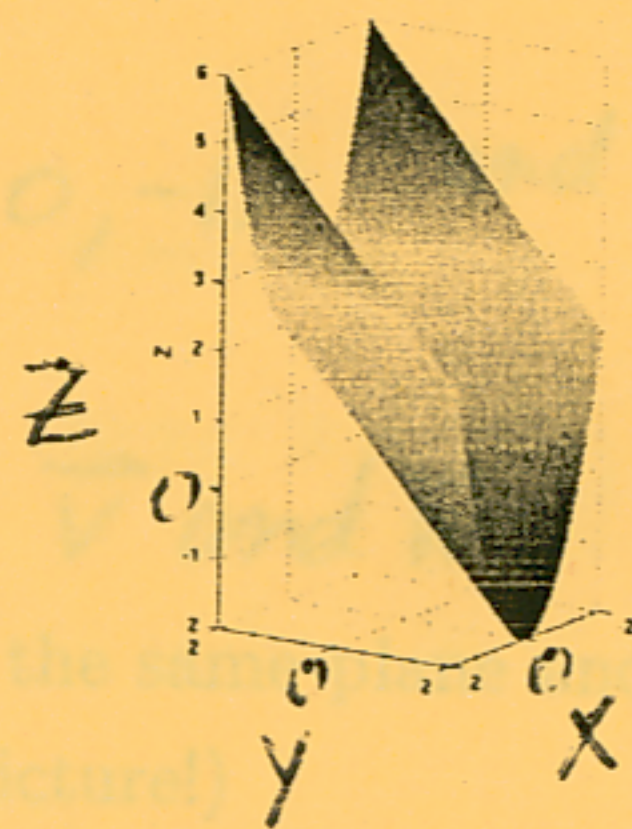
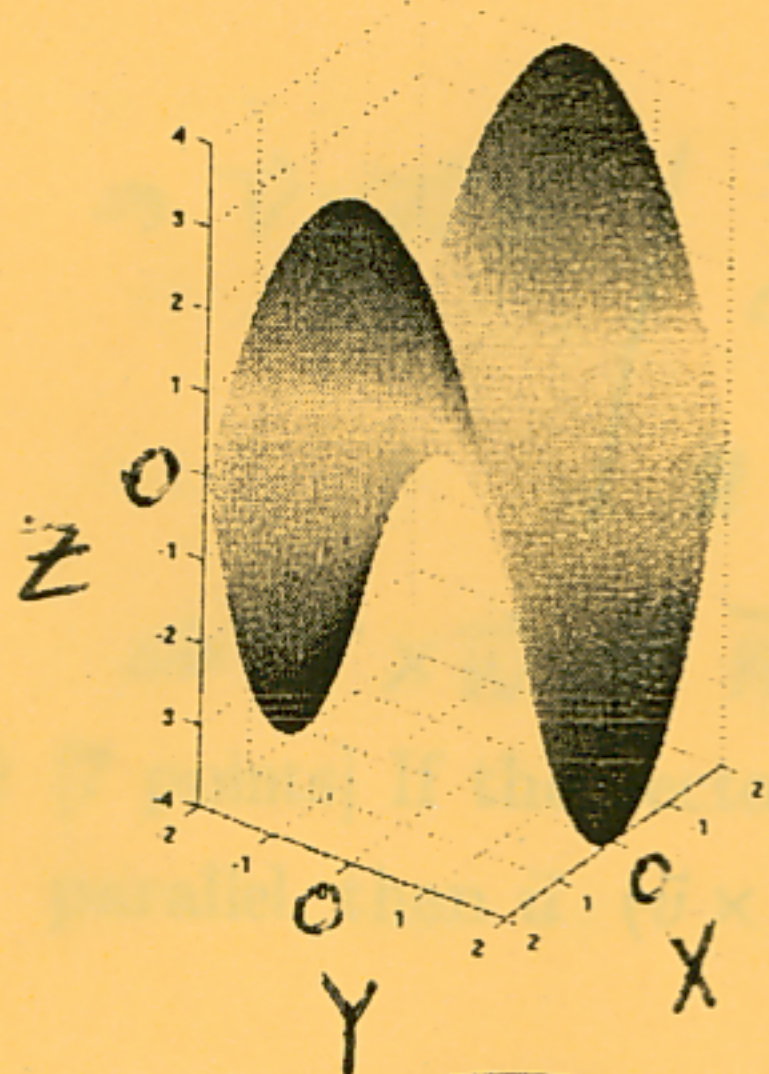
$$y=1 \Rightarrow z=x^2+1$$

$$y=-1 \Rightarrow z=x^2-1$$

$$y=2 \Rightarrow z=x^2+2$$

hash
each mark = 1 unit

(b) [8 points] Circle the graph of the given equation. Explain your choice.



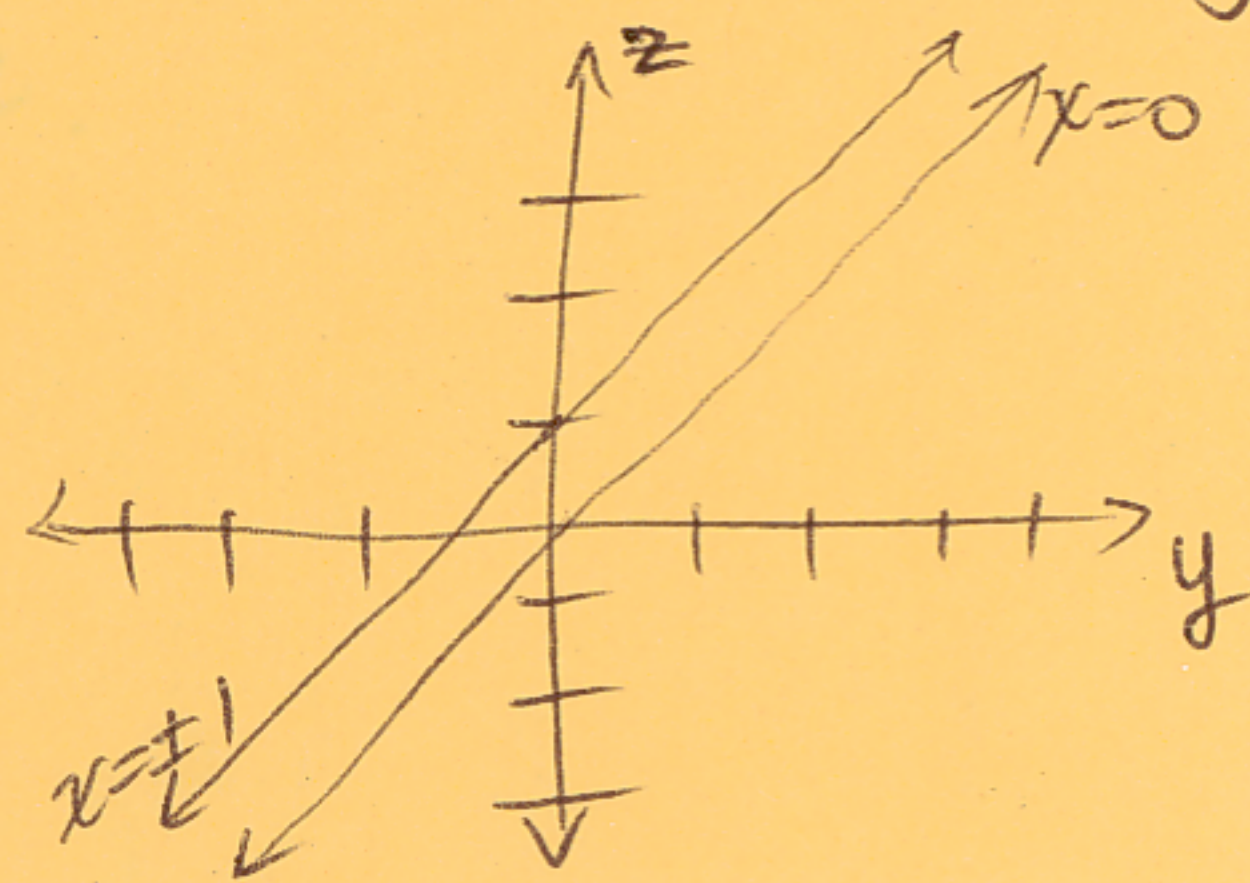
Double Check: ✓

x -traces:

$$x=0 \Rightarrow z=y$$

$$x=1 \Rightarrow z=1+y$$

$$x=-1 \Rightarrow z=-1+y$$



Every y -cross section is an upward facing parabola, and as y increases, the vertex of the parabola has an increasing height or z -coordinate. As y decreases the height of the vertex of the parabolic cross-section decreases as well.