

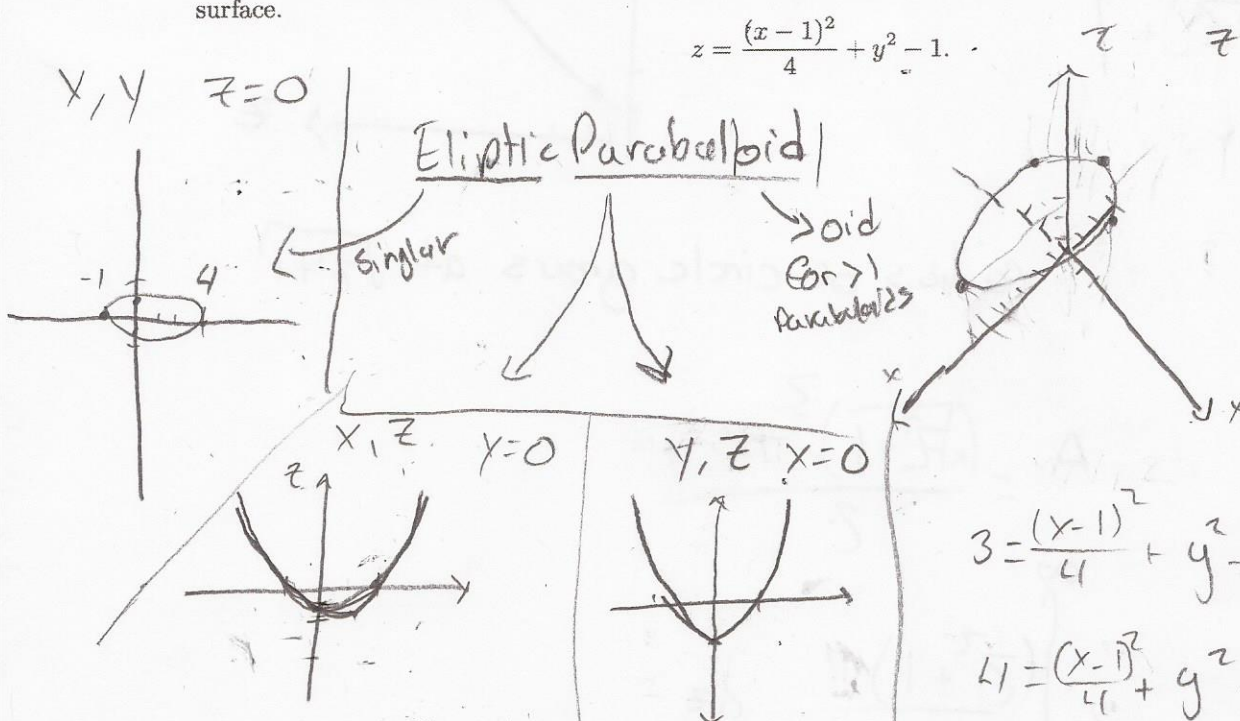
Name:

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Worksheet ¹³~~12~~

Exercise 1. Determine the coordinate plane traces and the $(z_0 = 3)$ -trace. Then name and sketch the surface.

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



Exercise 2. Determine the domain of $f(x, y) = \sqrt{1+x^2+y^2}$. Then, sketch level curves for $z_0 = 1$, $z_0 = \sqrt{5}$, and $z_0 = \sqrt{10}$.

Domain!

$$\{x, y \in \mathbb{R}^2\}$$

range: $z \in \mathbb{R}^+$

$$z_0 = \sqrt{5} \quad 1 = \sqrt{1+x^2+y^2}$$

$$\sqrt{5} = \sqrt{1+x^2+y^2}$$

$$5 = 1 + x^2 + y^2$$

$$4 = x^2 + y^2$$

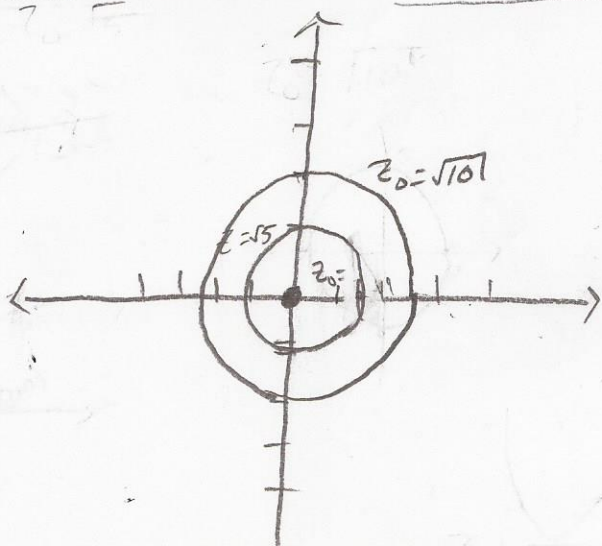
$$z_0 = 1$$

$$1 = \sqrt{1+x^2+y^2}$$

$$0 = x^2 + y^2$$

$$z_0 = \sqrt{10}$$

$$9 = x^2 + y^2$$



$$1 = \sqrt{1+x^2+y^2}$$

$$1 = 1 + x^2 + y^2$$