

Quiz 5; Wednesday, February 24
MATH 53 with Professor Stankova
Section 109; 11-12
GSI: Eric Hallman

Student name:

You have 10 minutes to complete the quiz. Calculators are not permitted, and remember to show your calculations and explain your reasoning in order to receive full credit.

1. Find an equation for the surface consisting of all points whose distance from the point $(1, 0, 0)$ is $\sqrt{2}$ times their distance from the plane $x = 1$. Identify the surface and sketch it.

$$\begin{aligned}\sqrt{(x-1)^2 + y^2 + z^2} &= \sqrt{2}|x-1| \\ x^2 - 2x + 1 + y^2 + z^2 &= 2(x-1)^2 \\ y^2 + z^2 &= (x-1)^2\end{aligned}$$

The surface is a cone centered at $(1, 0, 0)$ with the x-axis as its axis of symmetry.