

- (a) The distance from a point to the xy -plane is the absolute value of the z -coordinate of the point. Thus, the distance is $|-5| = 5$.
- (b) Similarly, the distance to the yz -plane is the absolute value of the x -coordinate of the point: $|1| = 1$.
- (c) The distance to the xz -plane is the absolute value of the y -coordinate of the point: $|7| = 7$.
- (d) The point on the x -axis closest to $(1, 7, -5)$ is the point $(1, 0, 0)$. (Approach the x -axis perpendicularly.)
The distance from $(1, 7, -5)$ to the x -axis is the distance between these two points: $\sqrt{(1-1)^2 + (7-0)^2 + (-5-0)^2} = \sqrt{74} \approx 8.60$.
- (e) The point on the y -axis closest to $(1, 7, -5)$ is $(0, 7, 0)$. The distance between these points is $\sqrt{(1-0)^2 + (7-7)^2 + (-5-0)^2} = \sqrt{26} \approx 5.10$.
- (f) The point on the z -axis closest to $(1, 7, -5)$ is $(0, 0, -5)$. The distance between these points is $\sqrt{(1-0)^2 + (7-0)^2 + [-5-(-5)]^2} = \sqrt{50} = 5\sqrt{2} \approx 7.07$.