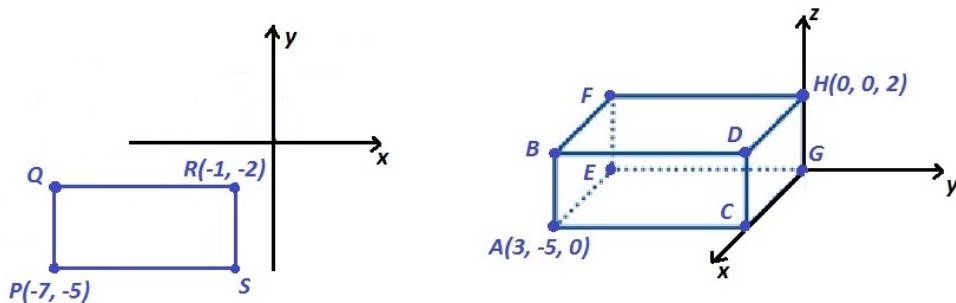


Math 32 – Workshop #1

1. For the problem below, we have the following rectangle and rectangular parallelepiped (3D box, hyperrectangle, rectangular prism).



Determine the following using the rectangle.

- (a) Find the coordinates of each of the corners.
- (b) Find the midpoint of the diagonal which connects points P and R .
- (c) Find the length of the diagonal which connects points P and R .

Determine the following using the 3D box.

- (d) Find the coordinates of each of the remaining six corners.
- (e) Find the midpoint of the diagonal which connects points F and C .
- (f) Find the length of the diagonal which connects points F and C .

2. Graph each of the following equations/inequalities twice. Your first graph of each should be in \mathbb{R}^2 (2D space, the xy -plane), and your second graph of each should be in \mathbb{R}^3 (3D space, xyz -space).

- (a) $x = 1$
- (b) $y > 5$
- (c) $y = x$
- (d) $x^2 + y^2 = 4$

3. Write equations or inequalities that describe the set of points. Sketch a picture.

- (a) The plane perpendicular to the y -axis at $(0, -4, 0)$.
- (b) The plane through the point $(2, 5, -7)$ perpendicular to the x -axis.
- (c) The plane through the point $(2, 5, -7)$ parallel to the xy -plane.
- (d) The circle of radius 2 centered at $(-3, 1, 6)$ and lying in a plane parallel to the yz -plane.