1.2.19

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August 28, 2025

Question

In which quadrant or on which axis do each of the points $(-2, 4), (3, -1), (-1, 0), (1, 2)$ and $(-3, -5)$ lie? Verify your answer by locating them on the Cartesian plane?

Theoretical Solution

If x=0 then the point (x, y) lies on y-axis.
If y=0 then the point (x, y) lies on x-axis.
If $x > 0, y > 0$ then the point (x, y) lies in 1^{st} quadrant.
If $x < 0, y > 0$ then the point (x, y) lies in 2^{nd} quadrant.
If $x < 0, y < 0$ then the point (x, y) lies in 3^{rd} quadrant.
If $x > 0, y < 0$ then the point (x, y) lies in 4^{th} quadrant.

Theoretical Solution

We can infer that $(-2, 4)$ lies in 2^{nd} quadrant as $-2 < 0$,$4 > 0$.
Similarly $(3, -1)$,$(-1, 0)$,$(1, 2)$,$(-3, -5)$ lie on 4^{th}quadrant,x-axis,1^{st} quadrant,3^{rd} quadrant respectively .

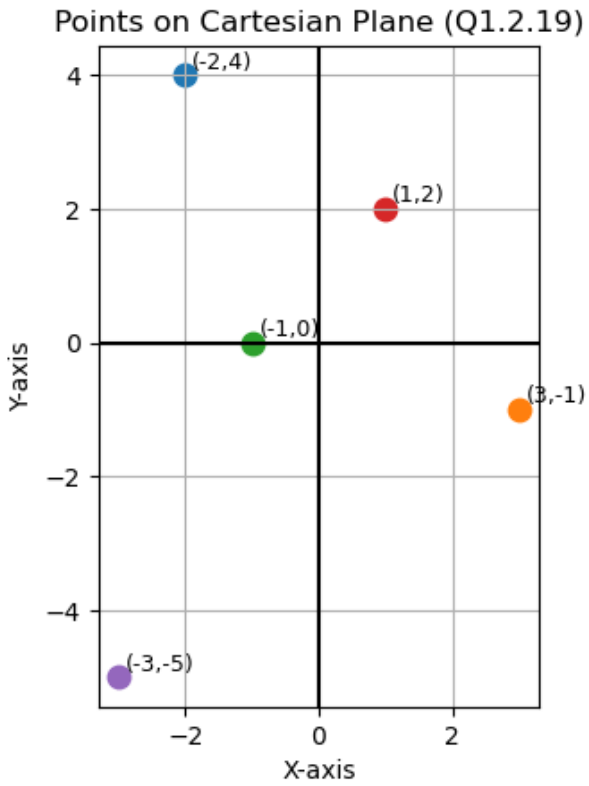
Python Code

```
import matplotlib.pyplot as plt

# Given points
points = [(-2, 4), (3, -1), (-1, 0), (1, 2), (-3, -5)]


# Plotting using plt only
plt.axhline(0, color='black') # x-axis
plt.axvline(0, color='black') # y-axis

for (x, y) in points:
    plt.scatter(x, y, s=80)
    plt.text(x+0.1, y+0.1, f"({x},{y})", fontsize=9)
```

Python Code

```
plt.title("Points on Cartesian Plane (Q1.2.19)")
plt.xlabel("X-axis")
plt.ylabel("Y-axis")
plt.grid(True)
plt.gca().set_aspect('equal', adjustable='box')
plt.savefig("/home/gauthamp/ee1030-2025/ai25btech11013/matgeo
    /1.2.19/figs/Figure1.png")
plt.show()
```

Plot


Points on Cartesian Plane (Q1.2.19)
(-2,4)
(1,2)
(-1,0)
(3,-1)
(-3,-5)
4
2
0
−2
−4
−2
0
2
Y-axis
X-axis