

For $\triangle XYZ$, given $X(4,8)$ $Y(0,-4)$ $Z(-4,2)$

Find the Orthocenter point, algebraically:

- You need the slope of each side, to determine the slope of each altitude
- Identify which vertex each altitude will pass through and write a point-slope equation $y - y_1 = m(x - x_1)$
- Solve the equation for y
- Set two equations equal to each other and solve for the x coordinate
- Substitute into the third equation and solve for the y coordinate
- Write the orthocenter point as $O(x, y)$