Determine Equation of Absolute Value Function Given 3-Noncollinear Points

Directions: Given the 3-noncollinear points, find the absolute value that contains all three points.

Step 1
Start with three distinct noncollinear points.

L7	L1	L2
a	-5	8
b	2	-3
c	4	6

Step 2
Determine where the absolute value function will occur based on the position of the point. In this case, the stronger slope would be the slope of the line between point B and point C.

Step 3
Find the slope of the line BC

$$m := \frac{L2_{[2]} - L2_{[3]}}{L1_{[2]} - L1_{[3]}}$$

Step 4
Find the equations of the two lines with that slope and its negative slope.

Step 5
Determine the intersection point.

Step 6
Use that point of intersection to create an absolute value function.

y1(x):=Side1(x)
y2(x):=Side2(x)
y3(x):=abs(m*(x-IPx))+IPy
**IP stands for Intersection Point.*