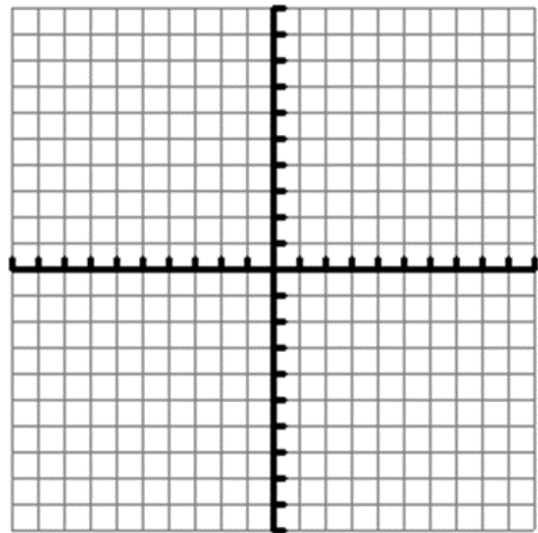


Warm-up 5: Parabolas

$$y^2 - 16y - 4x + 48 = 0$$



vertex = _____

focus = _____

directrix = _____

ends of LR = _____