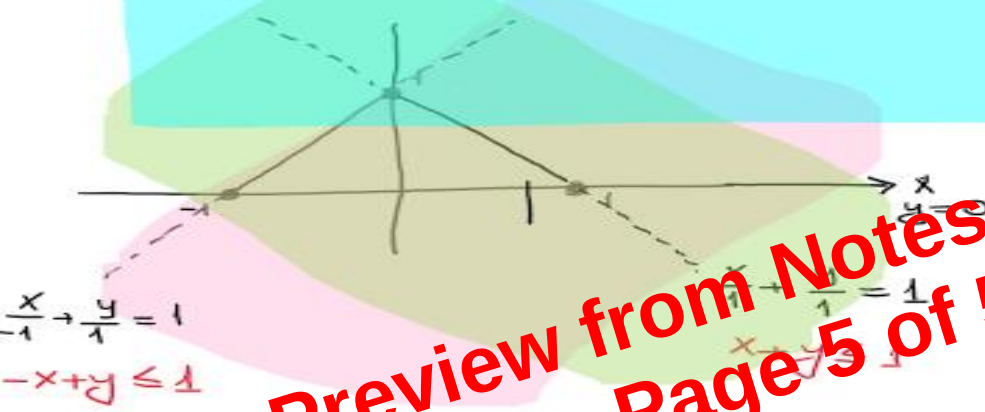


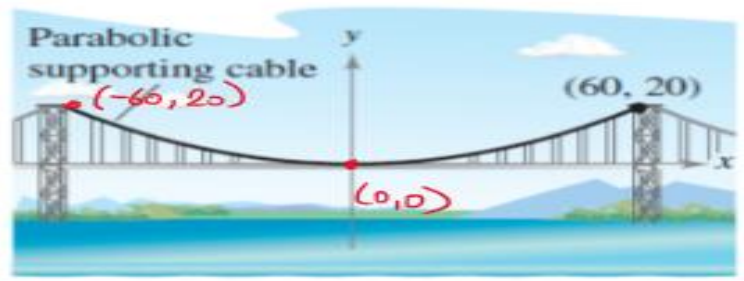
30. [4 points] Derive a set of inequalities to describe the triangle with vertices $(-1, 0)$, $(1, 0)$, $(0, 1)$.



$$\begin{cases} -x + y \leq 1 & (1) \\ x + y \leq 1 & (1) \\ y \geq 0 & (1) \end{cases}$$

Preview from Notesale.co.uk
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31. [5 points] A cable of a suspension bridge is suspended (in the shape of a parabola) between two towers that are 120 meters apart and 20 meters above the roadway. The cable touches the roadway midway between the towers. Find an equation for the parabolic shape of the cable.



$$y = ax^2 + bx + c$$

$$\begin{cases} a \cdot 0^2 + b \cdot 0 + c = 0 \\ a \cdot 60^2 + b \cdot 60 + c = 20 \\ a \cdot (-60)^2 + b \cdot (-60) + c = 20 \end{cases} \Rightarrow \begin{cases} c = 0 \\ 3600a + 60b = 20 \\ 3600a - 60b = 20 \end{cases} +$$

$$7200a = 40$$

$$a = \frac{1}{180}, \quad b = 0$$

$$y = \frac{1}{180} x^2 \quad (3)$$