1.8 Ex 2 (from notes)

Minimize $g = 22x - 17y$

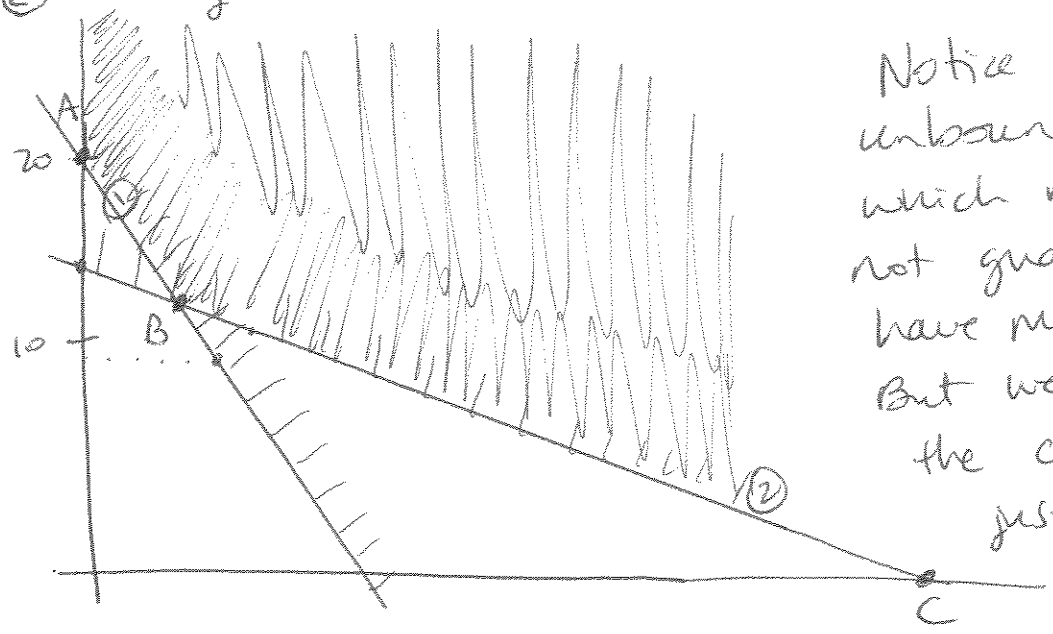
s.t. ① $8x + 5y \geq 100$

② $12x + 25y \geq 360$

$x \geq 0, y \geq 0$

① $5y \geq -8x + 100 \iff y \geq \frac{-8}{5}x + 20$

② $25y \geq -12x + 360 \iff y \geq \frac{-12}{25}x + 14\frac{2}{5}$



Notice this is unbounded region which means we're not guaranteed to have min or max. But we can check the corner pts, just in case.

A: (0, 20)

B: (5, 12)

C: (30, 0) where ② meets x-axis

B: int pt of ① & ②

$25\left(\frac{-8}{5}x + 20\right) = \left(\frac{12}{25}x + \frac{72}{5}\right)25$

$-40x + 500 = -12x + 360$

$140 = 28x$

$5 = x$

$y = \frac{-8}{5}(5) + 20 = -8 + 20 = 12$

A: $g = 22(0) - 17(20) = \boxed{-340}$ min out of these choices

B: $g = 22(5) - 17(12) = -94$

C: $g = 22(30) - 0 = 660$

but notice, the point (0, 1000) is also in the unbounded region ⇒ it produces smaller g-value ⇒ there is no min!