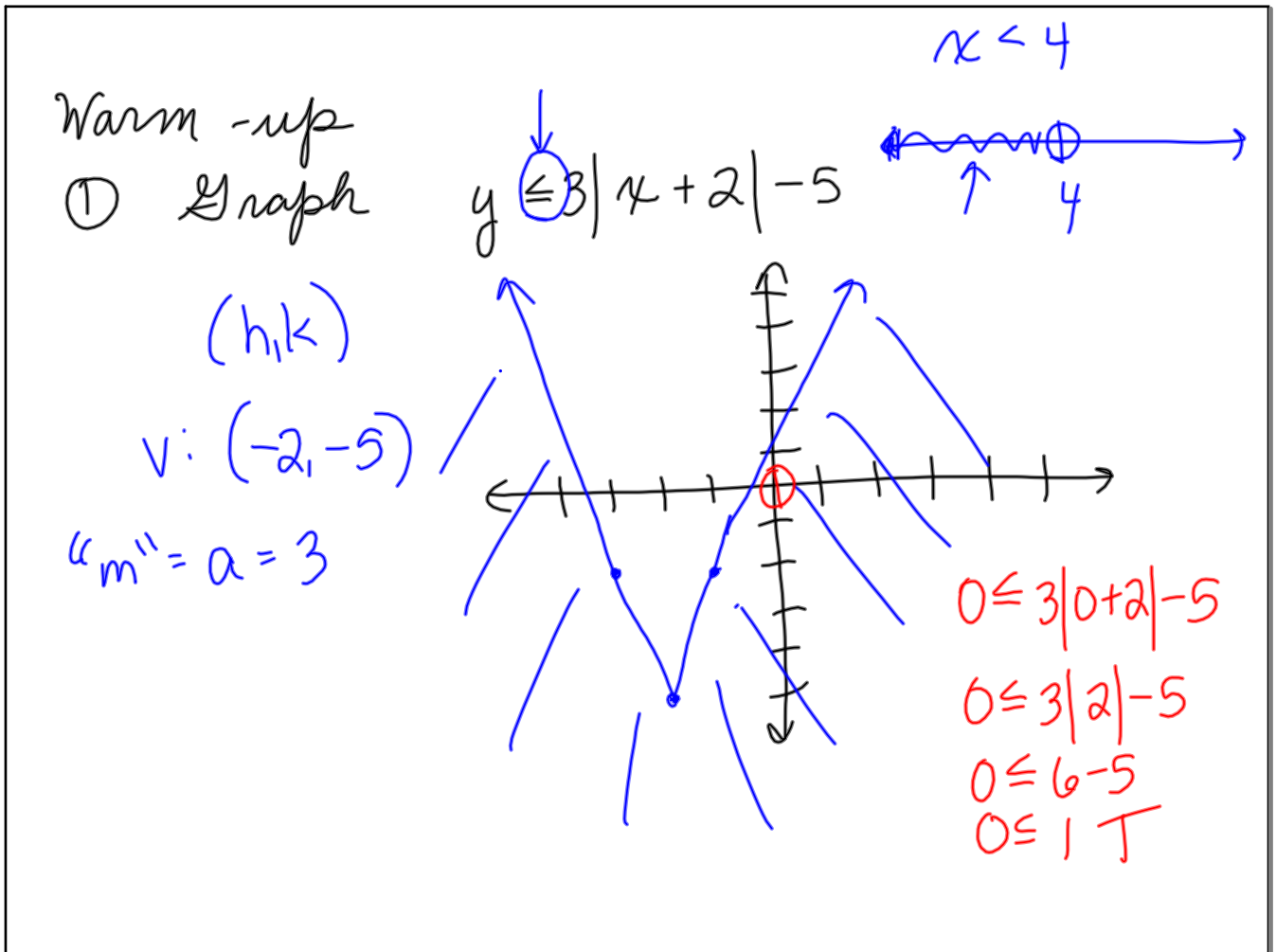


Warm-up

① Graph $y \leq 3|x+2| - 5$

- ② A city wants to plant maple and spruce trees. It has \$2100 and 45,000 ft² available. Spruce trees are \$30 and require 600 ft². Maple trees are \$40 and require 900 ft². If spruce trees absorb 650 lb/yr of carbon dioxide and maple trees absorb 300 lb/yr of carbon dioxide, how many of each should be planted to maximize CO₂ absorption?



② A city wants to plant maple and spruce trees. It has \$2100 and 45,000 ft² available. Spruce trees are \$30 and require 600 ft². Maple trees are \$40 and require 900 ft². If spruce trees absorb 650 lb/yr of carbon dioxide and maple trees absorb 300 lb/yr of carbon dioxide, how many of each should be planted to maximize CO₂ absorption?

	Maple, x	Spruce, y	Total
\$	40x	30y	≤ 2100
land sq. ft.	900x	600y	≤ 45,000
CO ₂ lb/yr	300x	650y	Max of

$$C = 300x + 650y$$

Constraints

$$0 \leq 2100 - 40x - 30y \leq 2100$$

$$0 \leq 45000 - 900x - 600y \leq 45,000$$

$$x \geq 0, y \geq 0$$

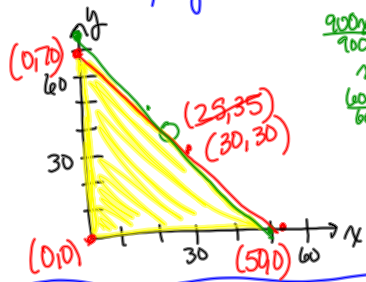
$$40x = 2100 \Rightarrow x = 52.5$$

$$30y = 2100 \Rightarrow y = 70$$

$$\frac{900x}{900} = \frac{45000}{900} \Rightarrow x = 50$$

$$\frac{600y}{600} = \frac{45000}{600} \Rightarrow y = 75$$

Graph feasible region



Find vertices
Plugging OF.

$$-20(40x + 30y = 2100) \Rightarrow -800x - 600y = -42000$$

$$900x + 600y = 45000$$

$$100x = 3000 \Rightarrow x = 30$$

$$40(30) + 30y = 2100 \Rightarrow 1200 + 30y = 2100 \Rightarrow 30y = 900 \Rightarrow y = 30$$

$$C = 300x + 650y$$

(0,0) $C = 300(0) + 650(0) = 0$

(0,70) $C = 300(0) + 650(70) = 45,500$

(30,30) $C = 300(30) + 650(30) = 9000 + 19,500 = 28,500$

(50,0) $C = 300(50) + 650(0) = 15000$

Plant 0 Maple & 70 Spruce