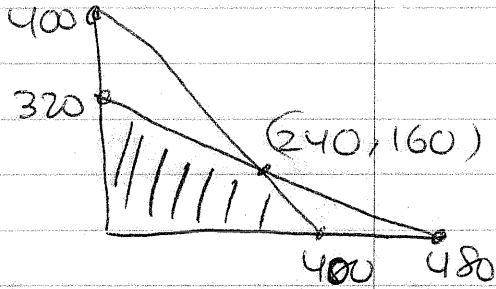


#117/1

	short x	long y	total	labor	profit	constraints
	x	y		$0.5x$	$11x$	$x+y \leq 400$
				$0.75x$	$16y$	$0.5x + 0.75y \leq 240$
			<u>400</u>	<u>240</u>		$2x + 3y \leq 960$



$$\begin{aligned}
 2x + 3y &= 960 \\
 (x + y = 400) \cdot 2 & \\
 -2x - 2y &= -800 \\
 \hline
 2x + 3y &= 960 \\
 y &= 160 \\
 x &= 240
 \end{aligned}$$

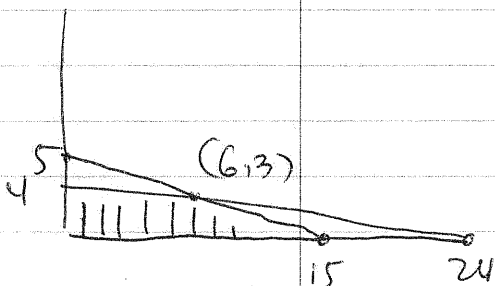
$(0,0)$	$\rightarrow 0$
$(0,320)$	$\rightarrow 11(0) + 16(320) = 5120$
$(400,0)$	$\rightarrow 11(400) = 4400$
$(240,160)$	$\rightarrow 11(240) + 16(160) = 5200$

240 short; 160 long profit \$5200

	tomatoes x	green beans y	cost	land	profit
	x	y	$1x$	$1x$	$1x$
			$3y$	$6y$	$4y$
			<u>15</u>	<u>24</u>	

$$\begin{aligned}
 x + 3y &\leq 15 \\
 x + 6y &\leq 24 \\
 x &> 0 \\
 y &> 0
 \end{aligned}$$

$$C: x + 4y$$



Intersection

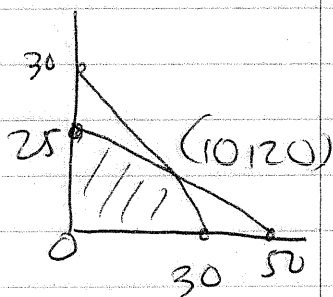
$$\begin{aligned}
 x + 3y &= 15 \\
 -x - 6y &= -24 \\
 \hline
 -3y &= -9 \\
 y &= 3 \\
 x &= 6
 \end{aligned}$$

Vertices: $(0,0)$	$\rightarrow 0$	$(6,3)$	$\rightarrow 18$
$(0,4)$	$\rightarrow 16$		
$(15,0)$	$\rightarrow 15$		

			shop 1	shop 2	profit
③	cars	x	3x	4x	350x
	trucks	y	6y	4y	500y
			150	120	

$$\begin{aligned} 3x + 6y &\leq 150 \\ 4x + 4y &\leq 120 \end{aligned}$$

$$\text{Profit } 350x + 500y$$



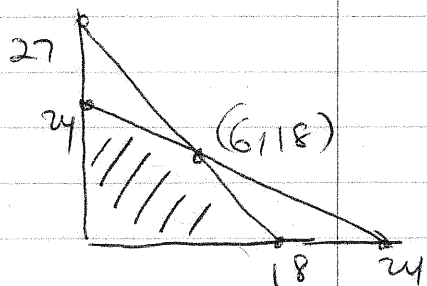
$$\begin{aligned} 3x + 6y = 150 &\rightarrow x + 2y = 50 \\ 4x + 4y = 120 &\rightarrow x + y = 30 \\ \hline & y = 20 \\ & x = 10 \end{aligned}$$

$$\begin{aligned} (10, 20) &\rightarrow \$13,500 \\ (0, 0) &\rightarrow 0 \\ (0, 25) &\rightarrow \$12,500 \\ (30, 0) &\rightarrow \$10,500 \end{aligned}$$

			Fabricate	Finish	Profit
④	Downhill	x	6x	1x	40x
	Crosscountry	y	4x	1y	30y
			108	24	

$$\begin{aligned} 6x + 4y &\leq 108 \\ x + y &\leq 24 \end{aligned}$$

$$C: 40x + 30y$$



Intersection

$$\begin{aligned} 6x + 4y &= 108 \\ -6x - 6y &= -144 \\ \hline -2y &= -36 \\ y &= 18 \rightarrow x = 6 \end{aligned}$$

$$\begin{aligned} (6, 18) &\rightarrow \$780 \\ (0, 0) &\rightarrow 0 \\ (0, 24) &\rightarrow 720 \\ (18, 0) &\rightarrow 720 \end{aligned}$$

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banana
nut

x
y

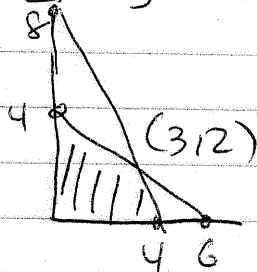
Flour
2x
3y
12

Eggs
2x
1y
8

Profit
2x
2y

$$2x + 3y \leq 12$$

$$2x + y \leq 8$$



$$(0,4) \rightarrow 8$$

$$(0,0) \rightarrow 0$$

$$(4,0) \rightarrow 8$$

$$(3,2) \rightarrow 10$$

$$2x + 3y = 12$$

$$-2x - y = -8$$

$$2y = 4$$

$$y = 2$$

$$x = 3$$

p103 #22

$$x^4 + 6 < 5x^2$$

$$x^4 - 5x^2 + 6 < 0$$

$$(x^2 - 3)(x^2 - 2) < 0$$

zeros: $\pm\sqrt{3}$; $\pm\sqrt{2}$

$$\sqrt{3} \approx 1.7$$

$$\sqrt{2} \approx 1.4$$

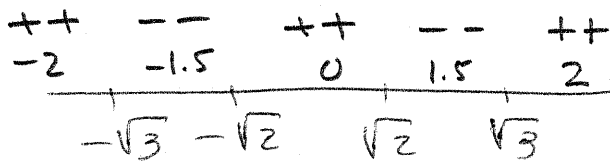
2: + + - +

1.5: - + - -

0: - - - +

-1.5: - + - -

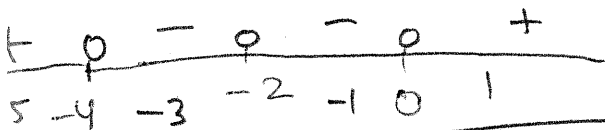
-2: + + - +



$$-\sqrt{3} < x < -\sqrt{2} \text{ or } \sqrt{2} < x < \sqrt{3}$$

30 $\frac{n^2 + 4n + 4}{n^2 + 4n} > 0$

$\frac{(n+2)^2}{n(n+4)} > 0$



$$n > 0 \text{ or } n < -4$$

1: + / +. + -> +

-1: + / -. + -> -

-3: + / -. + -> -

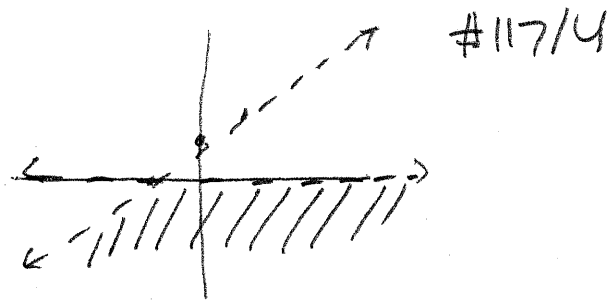
-5: + / -. - -> +

p106 # 20

$$y < 0$$

$$x - y > -1 \rightarrow -y > -x - 1$$

$$y < x + 1$$



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$$|x| \geq 2$$

\rightarrow

$$x \geq 2 \text{ or } x \leq -2$$

$$|y| \leq 4$$

\rightarrow

$$-4 \leq y \leq 4$$

