11/03/24

HW 17

(7.11) Primal:

max $x+y$
$2x+y \leq 3$
$x+3y \leq 5$
$x, y \geq 0$

$$c = \begin{pmatrix} 1 \\ 1 \end{pmatrix} \quad x = \begin{pmatrix} x \\ y \end{pmatrix}$$

$$b = \begin{pmatrix} 3 \\ 5 \end{pmatrix} \quad y = \begin{pmatrix} x_1 \\ y_1 \end{pmatrix}$$

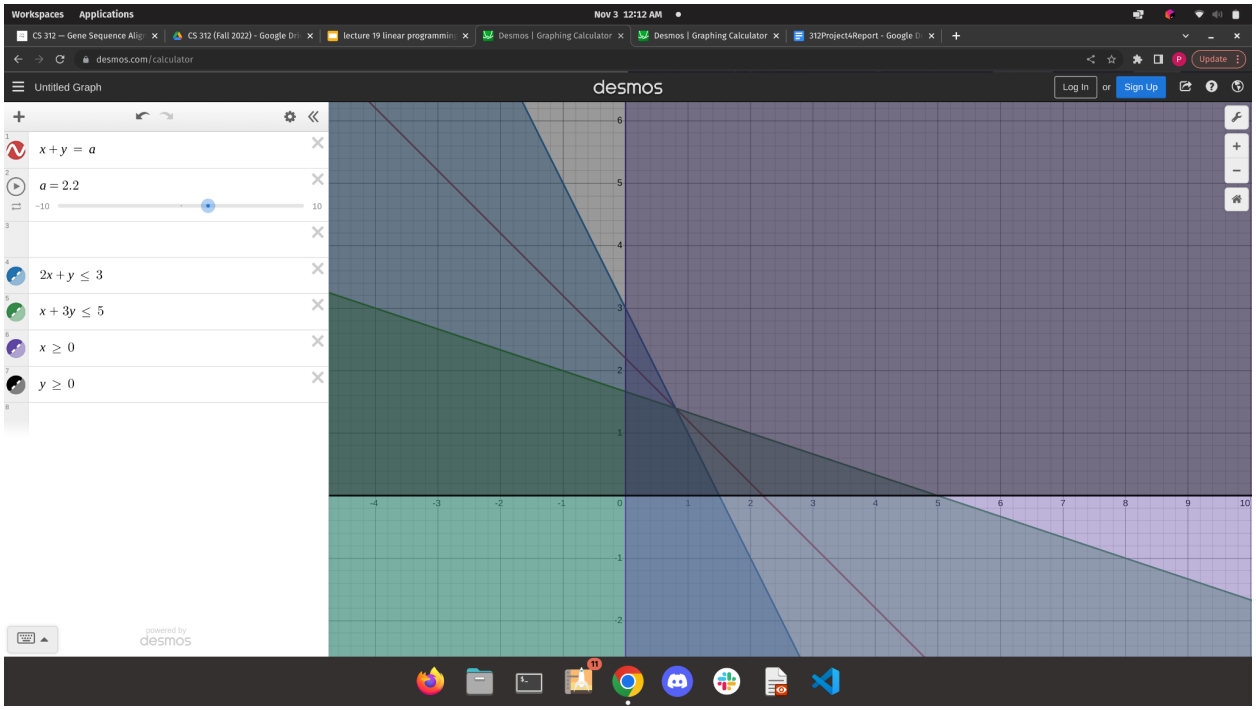
$$A = \begin{pmatrix} 2 & 1 \\ 1 & 3 \end{pmatrix}$$

The solution is $\boxed{2.2}$

Dual:

min $3x_1 + 5y_1$

$2x_1 + y_1 \geq 1$
$x_1 + 3y_1 \geq 1$
$x_1, y_1 \geq 0$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$x+y=a$
$a=2.2$
$2x+y\leq 3$
$x+3y\leq 5$
$x\geq 0$
$y\geq 0$
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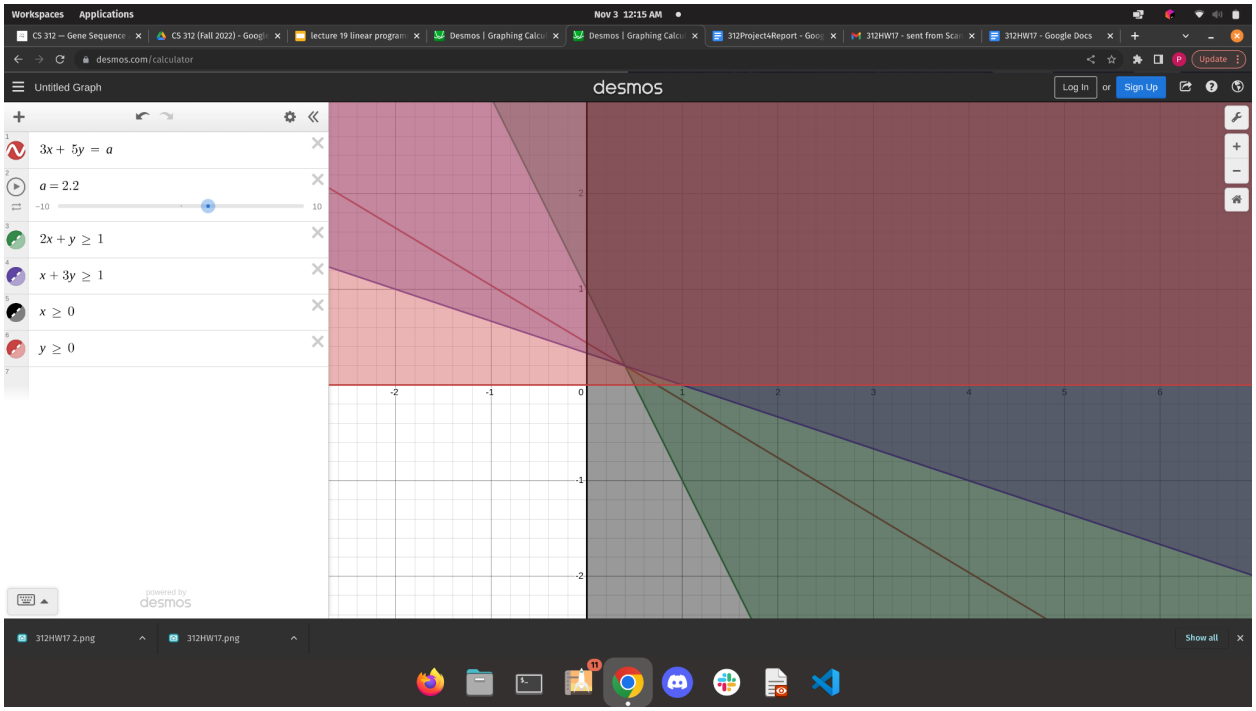
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$3x+5y=a$
$a=2.2$
$2x+y\geq 1$
$x+3y\geq 1$
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$y\geq 0$
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312HW17 2.png
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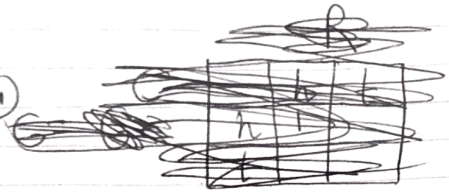
Show all

7.13.

(a.)



G=

R	C	
	h	t
h	1	-1
t	-1	1

(b.) $z = \min\{x-y, -x+y\}$

$\max z$
$z \le x - y$
$z \le -x + y$

$\max z$
$x - y + z \le 0$
$x - y + z \le 0$
$x + y = 1$
$x, y \ge 0$

$y = 1 - x$

$\max z$
$2x - 1 - z \le 0$
$-2x + 1 - z \le 0$
$0 \le x \le 1$