

Math M118 Practice Final Exam Part B – Answers

1. Mean  $\approx 77.92$  ; Median = 79 ; Mode = 80
2.  $E[X] = 3.2$   $\sigma[X] \approx 1.47$
3. 20 cents
- 4a. 400                      4b. 8.94
5. 0.6853
6. 0.9357
- 7a. 80                      7b. 102
- 8a. 0.2119                8b. 0.9686
9. (e)

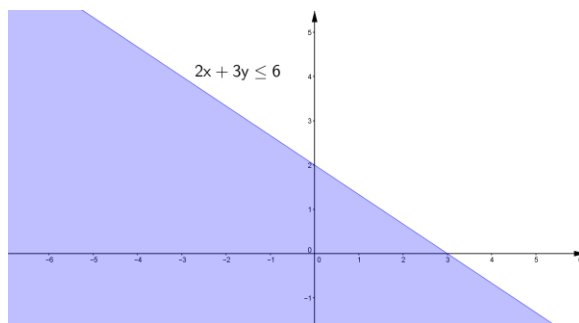
10.  $AB = \begin{bmatrix} 39 & 29 & -11 \\ 17 & 6 & -1 \end{bmatrix}$  ;  $BC = \begin{bmatrix} -3 & 2 \\ -14 & -9 \end{bmatrix}$  ;  $AC$  is undefined ;  $CD = \begin{bmatrix} 26 \\ -12 \\ -5 \end{bmatrix}$

11.  $\begin{bmatrix} -9 & 6 \\ 1 & 6 \end{bmatrix}$

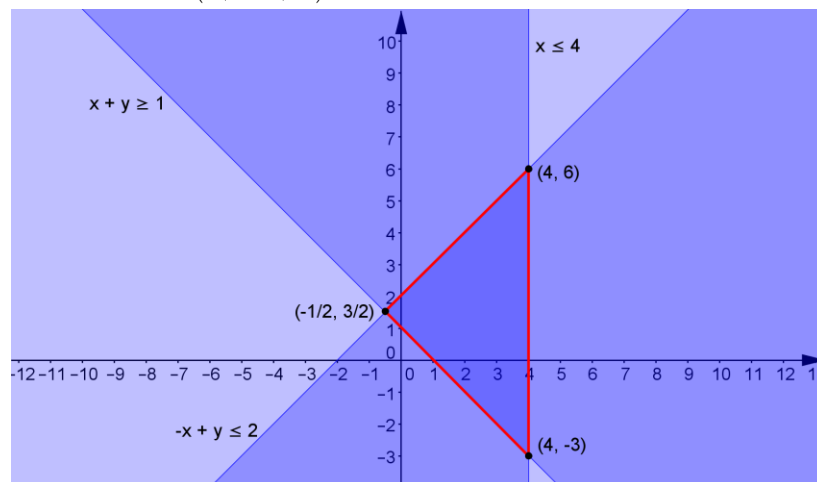
12.  $(-1, 2, 3)$

13. 31 cloth pairs and 14 leather pairs

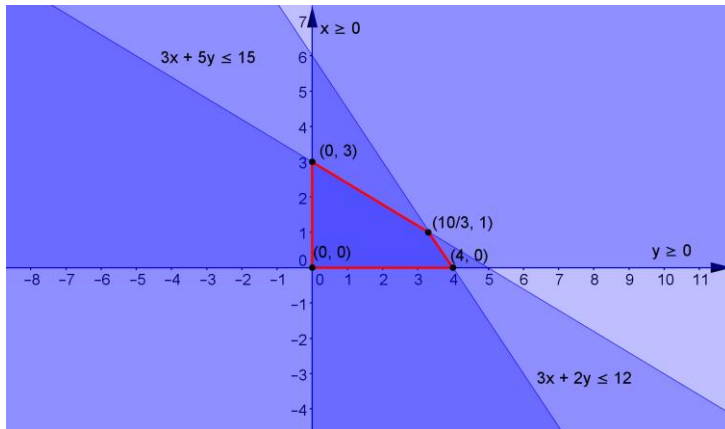
14.



15. Corner points:  $(-\frac{1}{2}, \frac{3}{2})$ ,  $(4, 6)$ ,  $(4, -3)$



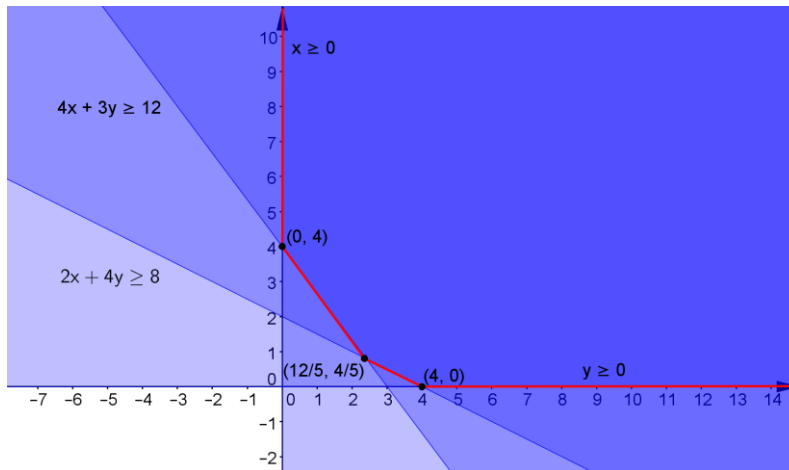
16.



Corner Points	Function Values: $f(x, y) = 2x + y$
(0, 0)	$f(0, 0) = 2(0) + (0) = 0$
(0, 3)	$f(0, 3) = 2(0) + (3) = 3$
(10/3, 1)	$f(10/3, 1) = 2(10/3) + (1) = 23/3 \approx 7.67$
(4, 0)	$f(4, 0) = 2(4) + (0) = 8$

Therefore, the maximum value of  $f$  is 8 when  $x = 4$  and  $y = 0$ .

17.



Corner Points	Function Values: $T(x, y) = x + 3y + 10$
(0, 4)	$T(0, 4) = (0) + 3(4) + 10 = 22$
(4, 0)	$T(4, 0) = (4) + 3(0) + 10 = 14$
(12/5, 4/5)	$T(12/5, 4/5) = (12/5) + 3(4/5) + 10 = 74/5 = 14.8$

The minimum value of  $T$  is 14 when  $x = 4$  and  $y = 0$ .

18. Maximum profit is \$780 when 6 of Type X and 18 of Type Y are produced.

19. 0.525

20. 0.46

21a.  $P_1 = [0.48 \quad 0.52]$

21b.  $P_3 = [0.3568 \quad 0.6432]$

22a.  $T = \begin{matrix} & R & D & I \\ D & \begin{bmatrix} 0.6 & 0.2 & 0.2 \\ 0.1 & 0.8 & 0.1 \\ 0.4 & 0.2 & 0.4 \end{bmatrix} \end{matrix}$

22b.  $P_2 = \begin{matrix} & R & D & I \\ & \begin{bmatrix} 0.3412 & 0.4712 & 0.1876 \end{bmatrix} \end{matrix}$