

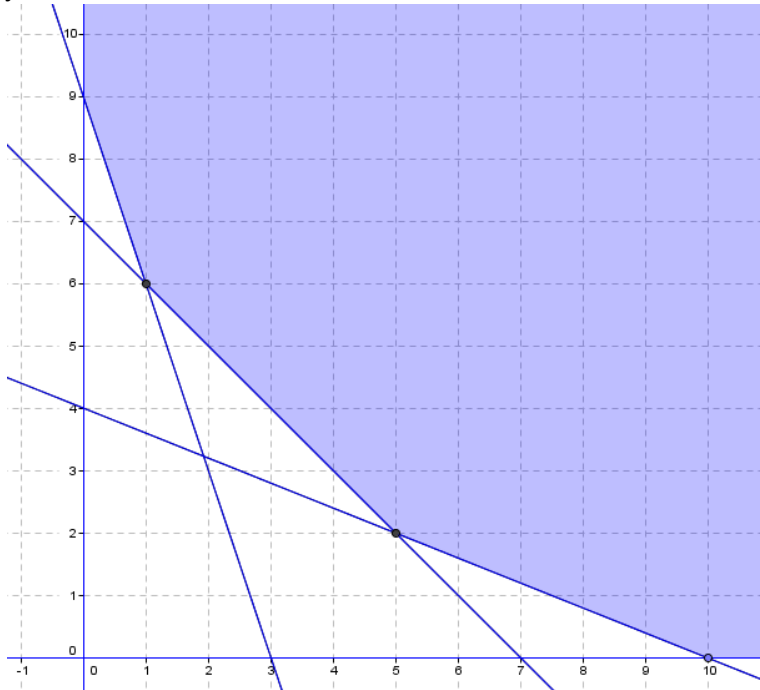
A. PILIHAN GANDA

[illegible]

B. URAIAN :

31. $3x + y \geq 9$; $x + y \geq 7$; $2x + 5y \geq 10$; $x \geq 0$; $y \geq 0$

Diperoleh daerah penyelesaian



$f(x, y) = 2x + 3y$

$f(10, 0) = 20 + 0 = 20$

$f(5, 2) = 10 + 6 = 16$

$f(1, 6) = 2 + 18 = 20$

$f(0, 9) = 0 + 27 = 27$

Nilai minimumnya adalah 16.

32.

Misal jumlah gaun model Itzy adalah x dan jumlah model gaun Izone adalah y

Harga gaun model Itzy = $2(1 \times 25.000 + 3 \times 15.000) = 2 \times 70.000 = 140.000$

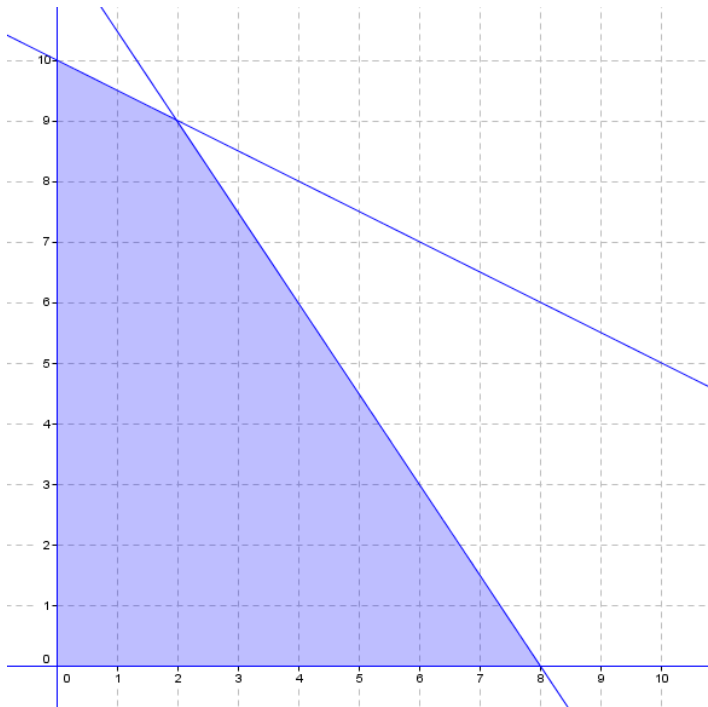
$2(1 \times 25.000 + 3 \times 15.000) = 2 \times 70.000 = 140.000$

Harga gaun model Izone = $2(2 \times 25.000 + 2 \times 15.000) = 2 \times 80.000 = 160.000$

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Berdasarkan soal dapat kita peroleh sistem pertidaksamaan linear :

$x + 2y \leq 20$; $3x + 2y \leq 24$; $x \geq 0$; $y \geq 0$



$$f(x, y) = 140.000x + 160.000y$$

$$f(8, 0) = 140.000 \times 8 + 160.000 \times 0 = 1.120.000$$

$$f(2, 9) = 140.000 \times 2 + 160.000 \times 9 = 1.720.000$$

$$f(0, 10) = 140.000 \times 0 + 160.000 \times 10 = 1.600.000$$

Sehingga pendapatan maksimumnya adalah Rp 1.720.000,00.

33. Diketahui matriks

$$A = \begin{pmatrix} z-y & 3 & -4 \\ 1 & 0 & 2 \\ -2 & x+y & 7 \end{pmatrix}, B = \begin{pmatrix} 2 & -5 & -1 \\ -4 & 3 & -z \\ -5 & 3 & 6 \end{pmatrix}, C = \begin{pmatrix} 2 & 5 & 3 \\ 8 & -3 & -1 \\ -3 & 3 & 1 \end{pmatrix}$$

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$$A - B = C^T$$

$$\begin{pmatrix} z-y & 3 & -4 \\ 1 & 0 & 2 \\ -2 & x+y & 7 \end{pmatrix} - \begin{pmatrix} 2 & -5 & -1 \\ -4 & 3 & -z \\ -5 & 3 & 6 \end{pmatrix} = \begin{pmatrix} 2 & 8 & -3 \\ 5 & -3 & 3 \\ 3 & -1 & 1 \end{pmatrix}$$

Berdasarkan operasi matriks tersebut diperoleh :

$$2 - (-z) = 3 \rightarrow z = 1$$

$$(z - y) - 2 = 2 \rightarrow z - y = 4 \rightarrow 1 - y = 4 \rightarrow y = -3$$

$$x + y - 3 = -1 \rightarrow x - 3 - 3 = -1 \rightarrow x = 5$$

$$4x + 8y - 3z = 4.5 + 8(-3) - 3.1 = 20 - 24 - 3 = -7$$

34. Diketahui matriks

$$P = \begin{pmatrix} -1 & 2 & 4 \\ 3 & 1 & 0 \\ -2 & 3 & -1 \end{pmatrix}, Q = \begin{pmatrix} 3 & -2 & 2 \\ -1 & 2 & 3 \\ 1 & -1 & 0 \end{pmatrix} P = \begin{pmatrix} -1 & 2 & 4 \\ 3 & 1 & 0 \\ -2 & 3 & -1 \end{pmatrix}, Q = \begin{pmatrix} 3 & -2 & 2 \\ -1 & 2 & 3 \\ 1 & -1 & 0 \end{pmatrix}$$

$$R = PQ - 2P$$

$$R = \begin{pmatrix} -1 & 2 & 4 \\ 3 & 1 & 0 \\ -2 & 3 & -1 \end{pmatrix} \begin{pmatrix} 3 & -2 & 2 \\ -1 & 2 & 3 \\ 1 & -1 & 0 \end{pmatrix} - 2 \begin{pmatrix} -1 & 2 & 4 \\ 3 & 1 & 0 \\ -2 & 3 & -1 \end{pmatrix}$$

$$= \begin{pmatrix} -1 & 2 & 4 \\ 8 & -4 & 9 \\ -10 & 11 & 5 \end{pmatrix} - \begin{pmatrix} -2 & 4 & 8 \\ 6 & 2 & 0 \\ -4 & 6 & -2 \end{pmatrix} = \begin{pmatrix} 1 & -2 & -4 \\ 2 & -6 & 9 \\ -6 & 5 & 7 \end{pmatrix}$$

$$|R| = 153$$

35. Misalkan $x = x$ = Harga jeruk

$$y = y = \text{harga mangga}$$

$$\begin{cases} 2x + 2y = 100.000 \\ 3x + 4y = 180.000 \end{cases} \begin{cases} 2x + 2y = 100.000 \\ 3x + 4y = 180.000 \end{cases}$$

Maka SPLDV yang kita dapat adalah

Dan dalam bentuk perkalian matriks :

$$\begin{pmatrix} 2 & 2 \\ 3 & 4 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 100.000 \\ 180.000 \end{pmatrix}$$

Diselesaikan dengan invers matriks

$$\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 2 & 2 \\ 3 & 4 \end{pmatrix}^{-1} \begin{pmatrix} 100.000 \\ 180.000 \end{pmatrix}$$

$$= \frac{1}{2} \begin{pmatrix} 4 & -2 \\ -3 & 2 \end{pmatrix} \begin{pmatrix} 100.000 \\ 180.000 \end{pmatrix}$$

$$= \frac{1}{2} \begin{pmatrix} 40.000 \\ 60.000 \end{pmatrix} = \begin{pmatrix} 20.000 \\ 30.000 \end{pmatrix}$$

Sehingga harga jeruk Rp 20.000,00 dan harga mangga Rp 30.000,00

C. NORMA PENILAIAN

KD 3.2			
Pilihan ganda (1-12)	=	12 x 6 =	72
Uraian (31)	=		12
Uraian (32)	=		16
Total			100

KD 3.3			
Pilihan ganda (13-21)	=	9 x 10 =	90
Uraian (33)	=		10
Total			100

KD 3.4			
Pilihan ganda (22-30)	=	9 x 9 =	81
Uraian (34)	=		10
Uraian (35)	=		9
Total			100

Purworejo, 5 November 2021
Penyusun Naskah Soal

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