

SUBJECT: _____

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3 Sub problems

Q5. a) $y = \sum m_i^T + \sum a_i + 1 \rightarrow \text{Min. (Ext.)}$

$$\begin{array}{|l} -b \\ \hline \frac{-b}{a} = -\frac{(-2)}{1} = 1 \\ \hline -1 \end{array} \quad \begin{array}{|l} y \\ \hline (1, 1) \\ \hline (0, 1) \end{array}$$

a) $y = -\sum m_i^T + \sum a_i + 1 \rightarrow \text{Max. (Ext.)}$

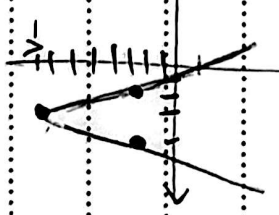
$$\begin{array}{|l} -b \\ \hline \frac{-b}{a} = -\frac{-1}{-2} = \frac{1}{2} \\ \hline -1 \end{array} \quad \begin{array}{|l} y \\ \hline (1, 1) \\ \hline (0, 1) \end{array}$$

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$$= \frac{-1}{1}$$

a) $y = m_i^T + a_i + 1$

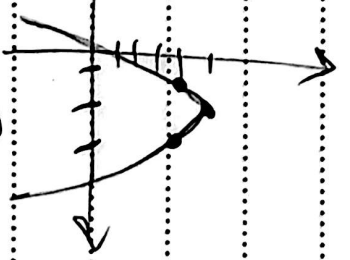
$$\begin{array}{|l} a \\ \hline y \\ \hline -1 \\ \hline -1 \end{array} \quad \begin{array}{|l} y \\ \hline -1 \\ \hline -1 \end{array}$$



a) $y = -m_i^T + \sum a_i + 1$

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$$\begin{array}{|l} m \\ \hline y \\ \hline 1 \\ \hline -\frac{b}{a} = \frac{-2}{-1} = 2 \\ \hline 1 \end{array} \quad \begin{array}{|l} y \\ \hline 2 \\ \hline 1 \end{array}$$



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B, D, P, S, Q, R, U, V

$$\alpha^r + \beta^r = S^r - r P S \quad \alpha^r + \beta^r \rightarrow S^r - r P \rightarrow 1^r - r(1-r) = 1 \quad (P)$$

$$\hookrightarrow 1^r - r(-r)(1) = 1$$

$$\sum \alpha^r + k \alpha^r = 9 \alpha - r = \dots$$

$$\sum \beta^r + k \beta^r = 9 \beta - r = \dots$$

$$5 \quad \underbrace{\sum (\alpha^r + \beta^r)}_V + k \underbrace{(\alpha^r + \beta^r)}_Q = 9 \underbrace{(\alpha + \beta)}_T - \sum = 0 \rightarrow rA + kK - 1P = 0$$

$$\omega k = -10$$

$$k = -r$$

$$n^r - r m n + m = 0 \rightarrow \alpha \beta = m$$

$$\hookrightarrow \alpha + \beta = r m$$

$$10 \quad \sqrt{\alpha} - \sqrt{\beta} = 1 \xrightarrow{\text{Square}} \alpha + \beta - 2\sqrt{\alpha\beta} = 1 \rightarrow r m - 2\sqrt{m} - 1 = 0 \quad \sqrt{m} = t$$

$$r t^2 - 2t - 1 = 0 \rightarrow \frac{r \pm \sqrt{r^2 + 4}}{2}$$

$$r m^2 - m - 1 = 0$$

Substitue

$$m = t \leftarrow \sqrt{m} = t \leftarrow \sqrt{1} \leftarrow \frac{r}{2}$$

$$\frac{r m^2 - m - 1}{a} = \frac{-1}{r}$$

$$\sum \frac{1}{r} \times \frac{r}{\alpha} \times \frac{1}{\beta} = \frac{r}{\sum} = \frac{r}{\sum}$$

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harmonic progression

$$\hookrightarrow \frac{\Delta}{\tan} \rightarrow \sqrt{(m+r)^2 - 4m} \rightarrow \sqrt{m^2 - 4m + 4} = \sqrt{(m-2)^2} = |m-2|$$

$$\frac{1}{r} m \times \frac{m-r}{r} = \frac{r}{\sum} \rightarrow \frac{m^2 - r m}{\sum} = \frac{r}{\sum} \rightarrow m^2 - r m = r \rightarrow m^2 - r m - r = 0$$

$$(m-r)(m+r) \rightarrow r^2 = 1$$

$$20 \quad \frac{1}{r} m \times \frac{r-m}{r} = \frac{r}{\sum} \rightarrow \frac{r m - m^2}{\sum} = \frac{r}{\sum} \rightarrow r m - m^2 = r$$

$$-m^2 + r m - r = 0 \rightarrow \Delta \leftarrow \frac{r^2 + 4r}{4}$$

$$y = m^2 - m r + 1 \rightarrow \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-r \pm \sqrt{r^2 + 4}}{2}$$

$$\frac{-b}{2a} = \frac{-r}{2}$$

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$$y = am^r + km + a \quad \frac{Obe}{Ext} \rightarrow -\frac{\Delta}{\Sigma a} = \frac{V}{\Lambda} \rightarrow \frac{\Sigma am^r - a}{\Sigma a} = \frac{V}{\Lambda} \quad (4)$$

$$rka - r\Lambda a - Vr = 0 \rightarrow \Sigma(\Lambda a^r - V a - \Lambda) = 0 \quad r\Lambda a = rka - Vr$$

$$\rightarrow \frac{V \pm \sqrt{V^2 - 4r\Lambda}}{2r\Lambda} \left\{ \begin{array}{l} \frac{r}{\Lambda} = r \quad V \rightarrow \text{lines } (1) \\ -\frac{\Lambda}{r} \propto 1 \text{ عيب } b \text{ min} \end{array} \right.$$

$$5 \quad m^r - (a+1)m + a = 0 \quad \frac{Obe}{Ext} \rightarrow r \frac{\Delta}{\Sigma a} = \frac{V}{\Lambda} \rightarrow \frac{\sqrt{\Delta}}{|a|} = r = \frac{\sqrt{(a-1)^2}}{1} \quad (4)$$

$$|a-1| = r \rightarrow \begin{array}{l} a = r \\ a = -1 \end{array} \quad \begin{array}{l} \text{موجب} \\ \text{سالب} \end{array}$$

$$10 \quad a^r - (ka+1)m + b = 0 \rightarrow \frac{Obe}{Ext} \rightarrow r \frac{\Delta}{\Sigma a} = \frac{V}{\Lambda} \rightarrow \frac{\sqrt{\Delta}}{|a|} = r = \frac{\sqrt{10a - \Sigma b}}{1}$$

$$10a - \Sigma b = \Sigma \rightarrow b = r\Sigma \quad (r\Sigma - r = r1)$$

$$11 \quad y = -am^r + am + r \quad \frac{Obe}{Ext} \rightarrow \frac{-b}{ra} = \frac{-a}{-ra} = \frac{1}{r} \rightarrow \frac{\Lambda + a}{\Sigma} = \frac{1}{r}$$

$$12 \quad y = rbm^r - bm + 1 \rightarrow \frac{-b}{ra} \rightarrow \frac{b}{\Sigma b} = \frac{1}{\Sigma} \rightarrow \frac{b}{\Lambda} - \frac{b}{\Sigma} - 1 = -\frac{(b+\Lambda)}{\Lambda}$$

$$13 \quad \frac{-a}{ra} + \frac{\Sigma a}{19} + \frac{r}{19} = \frac{ka + r}{19} = \frac{-(b+\Lambda)}{\Lambda} \rightarrow ka + r = -\Sigma \Lambda$$

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$$14 \quad \frac{b}{r} - \frac{b}{r} - 1 = -1 = \frac{\Lambda + a}{\Sigma} \rightarrow a = -r \quad \begin{array}{l} -ka + r = -\Sigma \Lambda \\ b = -a \\ b - a = -(-r) + r = 2r \end{array}$$

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$$r\beta = \frac{\beta}{ra} \rightarrow ra\alpha \quad r\beta = \beta \rightarrow a^r = \frac{1}{ra} \rightarrow \alpha = \pm \frac{1}{a} \quad (1)$$

$$+/\beta = \frac{-\xi}{ra} \xrightarrow{\text{simult}} \alpha = \frac{1}{a} \rightarrow \beta = \frac{-\xi}{a} - \frac{1}{a} = -1 \rightarrow \beta < \alpha$$

$$\beta = \frac{\xi + 1}{a} = 1 \rightarrow \beta > \alpha \checkmark$$

$$a \left(\frac{r}{a}\right)^r + \xi \left(\frac{r}{a}\right) + 1 \quad \left[\begin{array}{l} -b = \frac{r}{a} \\ ra = a \end{array} \right] \alpha = -\frac{1}{a}, \beta = 1$$

$y_s > a, n_s > 0 \rightarrow \text{ob. 1.1.1}$ $y = -Arx^r + \xi(n+1)$

$$a^r - \underbrace{(a^r + b^r - r)}_{s^r - rp} n + \underbrace{a + b - 1}_{sA} = 0 \quad (10)$$

$p = s - 1$

$$\rightarrow s = s^r - rp - r \quad p = s - 1 \quad s^r - rs - 1 = 0$$

$$\frac{-b \pm \sqrt{\Delta}}{ra} \rightarrow \frac{r \pm \sqrt{\xi a}}{r}$$

$\xi = \text{Uterje gaw gaw } \alpha = r$