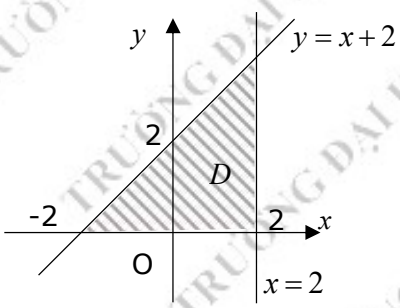


Câu	Nội dung	Điểm
1	Định m để A khả nghịch	2.5
	A khả nghịch $\Leftrightarrow \det A \neq 0$	0.5
	$A \xrightarrow{\substack{d_2 \rightarrow d_2 - 2d_1 \\ d_3 \rightarrow d_3 + d_1 \\ d_4 \rightarrow d_4 - 3d_1}} \begin{pmatrix} 1 & 2 & 3 & 1 \\ 0 & 1 & -4 & 6 \\ 0 & 1 & 2 & -1 \\ 0 & 3 & -3 & m-3 \end{pmatrix}$	0.75
	$\det A = 1 \cdot (-1)^{1+1} \cdot \begin{vmatrix} 1 & -4 & 6 \\ 1 & 2 & -1 \\ 3 & -3 & m-3 \end{vmatrix}$	0.5
	$= 6m - 63$	0.5
	Vậy A khả nghịch $\Leftrightarrow m \neq \frac{21}{2}$	0.25
2	Giải hệ phương trình	2.5
	Lập ma trận mở rộng	
	$\bar{A} = (A B) = \left(\begin{array}{ccc c} 1 & 0 & 1 & 0 \\ -2 & 1 & 0 & 2 \\ -1 & 1 & 0 & 0 \\ 7 & 3 & 9 & -2 \end{array} \right)$	0.25
	$\xrightarrow{\substack{d_2 \rightarrow d_2 + 2d_1 \\ d_3 \rightarrow d_3 + d_1 \\ d_4 \rightarrow d_4 - 7d_1}} \left(\begin{array}{ccc c} 1 & 0 & 1 & 0 \\ 0 & 1 & 2 & 2 \\ 0 & 1 & 1 & 0 \\ 0 & 3 & 2 & -2 \end{array} \right)$	0.75
	$\xrightarrow{\substack{d_3 \rightarrow d_3 - d_2 \\ d_4 \rightarrow d_4 - 3d_2}} \left(\begin{array}{ccc c} 1 & 0 & 1 & 0 \\ 0 & 1 & 2 & 2 \\ 0 & 0 & -1 & -2 \\ 0 & 0 & -4 & -8 \end{array} \right)$	0.5
	$\xrightarrow{d_4 \rightarrow d_4 - 4d_3} \left(\begin{array}{ccc c} 1 & 0 & 1 & 0 \\ 0 & 1 & 2 & 2 \\ 0 & 0 & -1 & -2 \\ 0 & 0 & 0 & 0 \end{array} \right)$	0.25
$r(A) = r(\bar{A}) = 3 = n \Rightarrow$ Hệ có nghiệm duy nhất	0.25	

	Vậy nghiệm của hệ là $\begin{cases} x_1 = -2 \\ x_2 = -2 \\ x_3 = 2 \end{cases}$	0.5
3	$L = \lim_{x \rightarrow +\infty} \left(\frac{x^2 + 3}{x^2 + x - 1} \right)^{x+2}$	2.0
	$L = \lim_{x \rightarrow +\infty} \left(1 + \frac{4-x}{x^2 + x - 1} \right)^{x+2}$	0.50
	$= \lim_{x \rightarrow +\infty} \left[\left(1 + \frac{4-x}{x^2 + x - 1} \right)^{\frac{x^2+x-1}{4-x}} \right]^{\frac{(4-x)(x+2)}{x^2+x-1}}$	0.50
	$= e^{\lim_{x \rightarrow +\infty} \frac{(4-x)(x+2)}{x^2+x-1}}$	0.50
	$= e^{-1}.$	0.50
4	Cho: $f(x, y) = 2\sin(3x + 2y) + 3\cos(3x + 2y)$	2.0
	Tính $f''_{xx}\left(0, \frac{\pi}{2}\right) + f''_{yy}\left(0, \frac{\pi}{2}\right).$	
	$f'_x = 6\cos(3x + 2y) - 9\sin(3x + 2y)$	0.25
	$f'_y = 4\cos(3x + 2y) - 6\sin(3x + 2y)$	0.25
	$f''_{xx} = -18\sin(3x + 2y) - 27\cos(3x + 2y)$	0.25
	$f''_{xx}\left(0, \frac{\pi}{2}\right) = 27$	0.25
	$f''_{yy} = -8\sin(3x + 2y) - 12\cos(3x + 2y)$	0.25
	$f''_{yy}\left(0, \frac{\pi}{2}\right) = 12$	0.25
$f''_{xx}\left(0, \frac{\pi}{2}\right) + f''_{yy}\left(0, \frac{\pi}{2}\right) = 39$	0.5	
5	Tính $I = \iint_D (6xy - 3x^2) dx dy$	1.0
	Vẽ miền D	0.25
		0.25
$D = \{(x, y) \in \mathbb{R}^2 : -2 \leq x \leq 2; 0 \leq y \leq x + 2\}$	0.25	

Do đó $I = \int_{-2}^2 dx \int_0^{x+2} (6xy - 3x^2) dy$	
Tính $\int_0^{x+2} (6xy - 3x^2) dy = (3xy^2 - 3x^2y) \Big _0^{x+2}$ $= 6x^2 + 12x$	0.25
$I = \int_{-2}^2 (6x^2 + 12x) dx = (2x^3 + 6x^2) \Big _{-2}^2 = 32$	0.25