Também na Questão 4

Classifique a cônica de equação

	$x^2 - 2xy + y^2 + 2x - 4y + 1 = 0.$	
	Escolha uma opção:	
	o um único ponto	
	○ elipse	
	O parábola	
	o duas retas paralelas	
	oduas retas concorrentes	
	O hipérbole	
	o conjunto vazio	
- > -	Invariantes ossociado às cômica	
	1 Marian 1003 Chrocian as Come	<i>7.</i>

Forma motricial de escreva os cônicas

$$A \times^2 + B \times y + C y^2 + D \times + E y + F = 0$$

Defina os matrizes $Q = A \frac{3}{2}$, e $V = X$

$$\frac{1}{2} \times y = A \frac{1}{2} \times y = A \times 2 + B \times y + C y^2$$

Le a parte quadrática da cônica.

Truça: Podemos resscreves a cônica assim:

$$A \times^2 + B \times y + C y^2 + D \times z + E yz + Fz^2 = 0$$
e fixos $z = 1$ e definir a matriz

$$P = \begin{bmatrix} x \\ y \\ z \end{bmatrix}$$

$$A \times \begin{bmatrix} x \\ z \\ z \end{bmatrix} = \begin{bmatrix} x \\ y \\ z \end{bmatrix}$$

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Obs: det R=1 $\begin{vmatrix} x & c & -s & 0 & x' \\ y & = & s & c & 0 & y' \\ 1 & 0 & 0 & 1 & 1 & 1 \end{vmatrix} P = R P'$ $P_{M}P = (\tilde{R}P')^{t}M\tilde{R}P' = P^{t}\tilde{R}^{t}M\tilde{R}P' = P'M'P'$ $n\sigma$ gual: $M = \tilde{R}^{\dagger} M \tilde{R} = A' O D'/2$ O C' E'/2 $D'_2 E' F'$ Fórmulas usadas D = Ac2 + Bcs + Cs2 B' = 0 $C' = A s^2 - B c s + C c^2$ D' = D c + E s= -Ds + EcF $\begin{bmatrix} x' & y' & 1 \end{bmatrix} \quad A' \quad O \quad D'/2$ $O \quad C' \quad E'/2$ $D'_2 \quad E' \quad F'$

P^t MP = 0 é a cônica gural

Primiro invariante $\Delta = B^2 - 4AC$

resulta que Q' = Rt QR det(R)=1

$$Q = \begin{array}{c|c} A & B/z \\ B/z & C \end{array}$$

$$det G' = det G$$

$$det Q = AC - \left(\frac{B}{2}\right)^2 = AC - \frac{B^2}{4} = \left(-\frac{1}{4}\right)D$$

Translação:

$$\int x'' = x' - h$$

$$\int y'' = y' - k$$

$$\int y' = x'' + h$$

$$\int y' = y'' + k$$

$$\begin{bmatrix} x' \\ y' \\ 1 \end{bmatrix} = \begin{bmatrix} 1 & 0 & k \\ 0 & 1 & k \\ 1 & 0 & 0 \end{bmatrix} \begin{bmatrix} x' \\ y'' \\ 1 & 1 \end{bmatrix}$$

det(T) = 1

Assim,
$$P'^{t}M'P = (TP'')^{t}M'TP'' =$$

$$= (P'')^{t}T^{t}M'TP'' = P'^{t}(T^{t}M'T)P''$$

$$= \sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{j=1}^{n}$$

$$A''x''^2 + B''x''y'' + C''y''^2 + D''x'' + E''y'' + F'' = 0$$

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$$A'' = A'$$

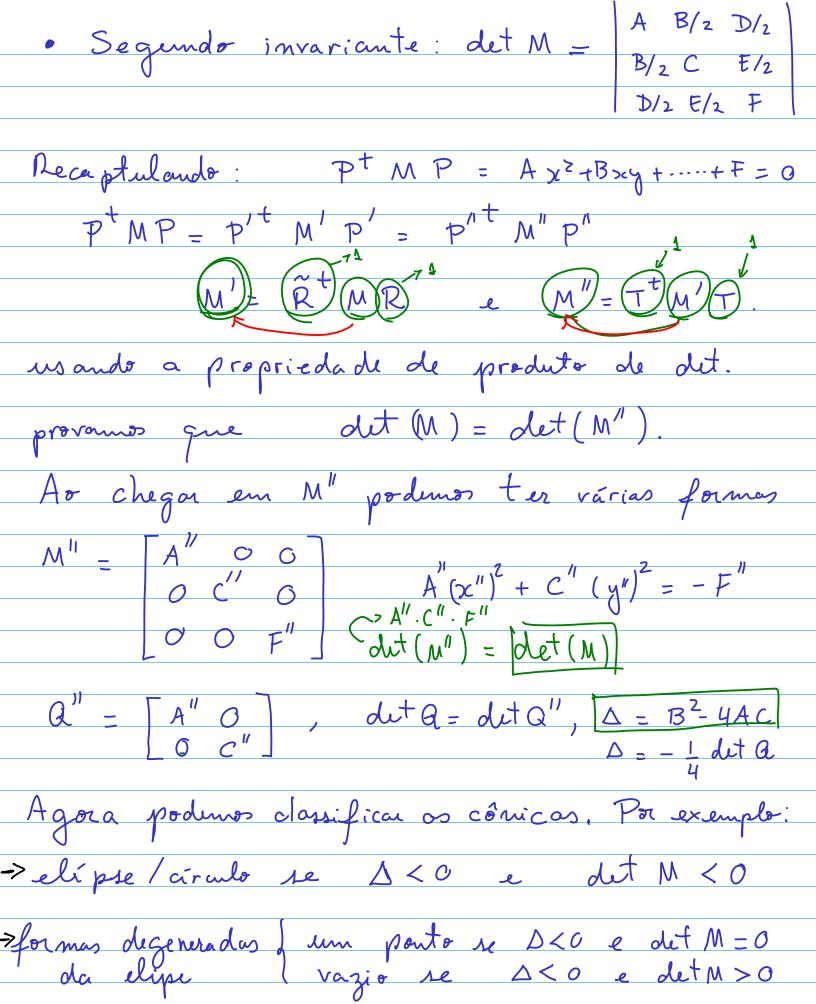
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$$B'' = B'$$

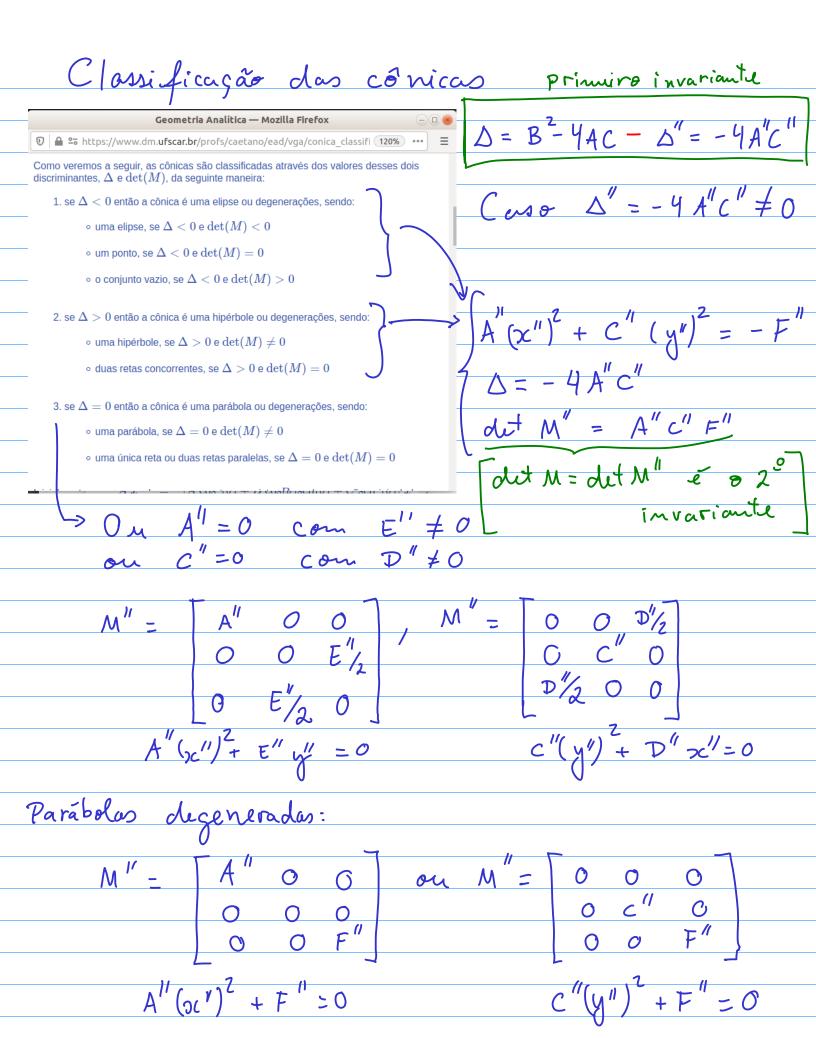
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$$C'' = C'$$

•
$$D'' = 2A'h + B'k + D'$$

$$\bullet \ E'' = 2C'k + B'H + E'$$

•
$$F'' = A'h^2 + B'hk + C'k^2 + d'h + E'k + F'$$





Q4 do Simulado

Classifique a cônica de equação

$$x^2 - 2xy + y^2 + 2x - 4y + 1 = 0.$$

Escolha uma opção:

- o um único ponto
- elipse
- o parábola
- O duas retas paralelas
- duas retas concorrentes
- hipérbole
- o conjunto vazio

det M

$$M = \begin{bmatrix} A & B/2 & D/2 \\ B/2 & C & E/2 \end{bmatrix} = \begin{bmatrix} 1 & -1 & 1 \\ -1 & 1 & -2 \end{bmatrix}$$

$$D/2 & E/2 & F \end{bmatrix}$$

$$\frac{dv!}{M-1} = \frac{1}{1} - \frac{1}{1} = \frac{1}{2} + \frac{2}{1} - \frac{1}{1} - \frac{1}{1} - \frac{1}{1}$$

$$\frac{1}{1} - \frac{1}{2} = \frac{1}{1} + \frac{2}{1} + \frac{2}{1} - \frac{1}{1} - \frac{1}{1} - \frac{1}{1}$$

como D=0 e del M ≠0 esta cónica é

una parábola.