Review on Calculus

$$\frac{df(x)}{dx} = f'(x)$$

$$\frac{dc}{dx} = 0 \qquad f(x) = c$$

c: constant

$$\frac{dx}{dx} = 1$$

$$f(x) = x$$

$$\frac{df(x)}{dx} = \frac{d(2x)}{dx} = 2$$

$$\frac{d\,nx}{dx} = n$$

$$\boxed{\frac{dx^n}{dx} = n \cdot x^{n-1}}$$

$$f(x) = x^n$$

$$\frac{dx^2}{dx} = 2x$$

$$f(x) = x^2$$

$$\frac{d\,2x^2}{dx} = 2 \cdot 2\,x^{2-1} = 4x$$

$$f(x) = \sqrt{x}^{\,1} = x^{1/2}$$

$$\frac{d\,x^{1/2}}{dx} = \frac{1}{2}\,x^{1/2-1} = \frac{1}{2}\,x^{-\frac{1}{2}} = \frac{1}{2x^{1/2}}$$

$$\frac{d\ln(x)}{dx} = \frac{1}{x}$$

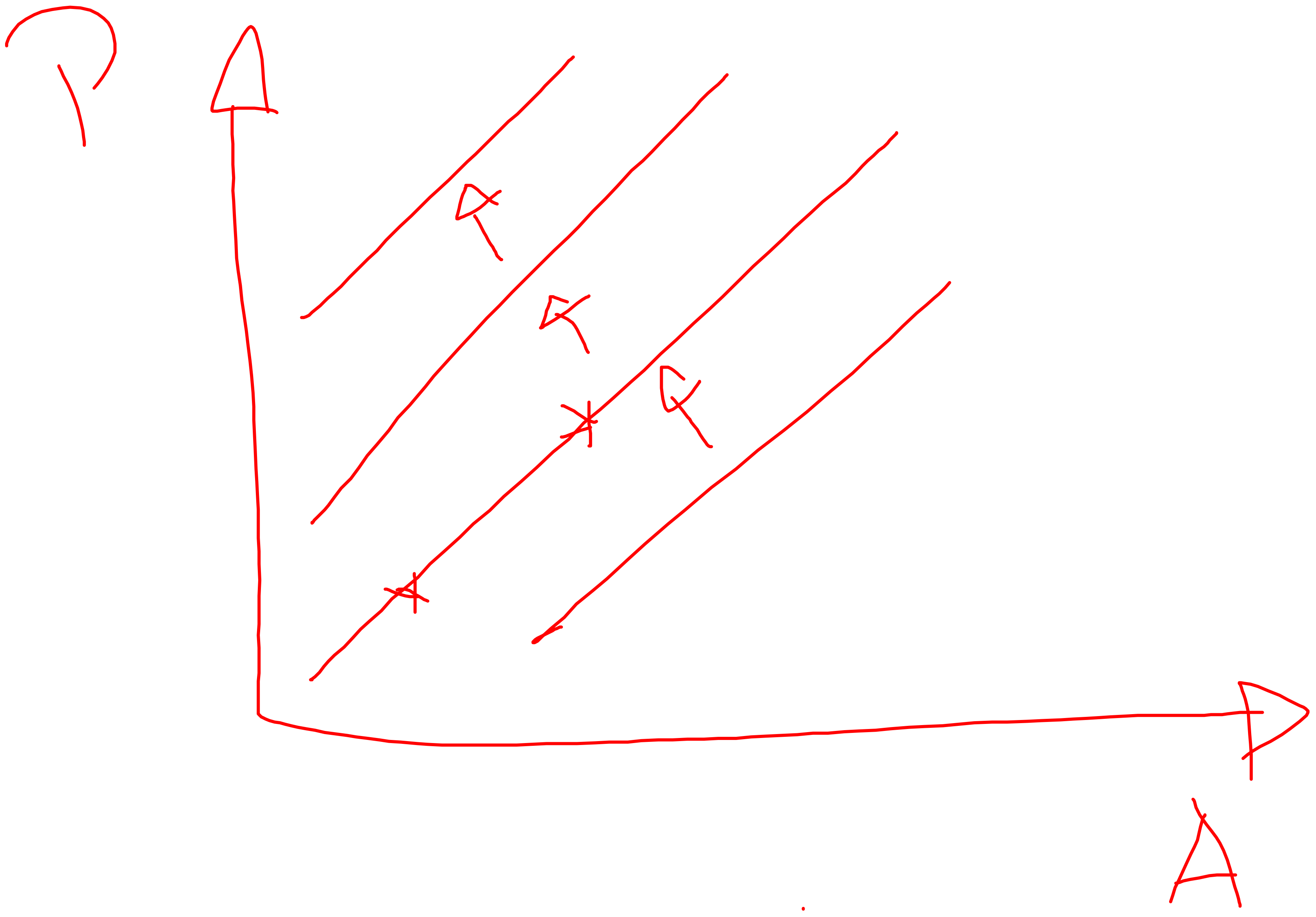
$$f(x_1, x_2) = \underline{x_1^2} + \underline{x_1 x_2} + \underline{x_2^2}$$

$$\frac{\partial f(x_1, x_2)}{\partial x_1} = 2x_1 + x_2$$

$$U(M, C) = \overbrace{\frac{1}{2} M^2} + \underbrace{2C^2}$$

$$MU_M = \frac{\partial U(M, C)}{\partial M} = \frac{1}{2} 2 M^{2-1} = M$$

$$MU_C = \frac{\partial U(\cdot)}{\partial C} = 2 \, 2 C^{2-1} = 4C$$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