

$$f(x) = x^3 + ax^2 + bx + c$$

$$f'(x) = 3x^2 + 2ax + b \quad f'(2) = 0$$

$$3 \cdot (2)^2 + 2 \cdot a \cdot (2) + b = 0$$

$$12 + 4a + b = 0$$

$$\boxed{4a + b = -12}$$

$$f''(x) = 6x + 2a \quad \left(\begin{array}{l} f''(1) = 0 \\ P(1, 2) \end{array} \right. \quad \begin{array}{l} \uparrow \\ \end{array}$$

$$6 \cdot (1) + 2a = 0$$

$$6 + 2a = 0$$

$$2a = -6$$

$$a = -\frac{6}{2}$$

$$\boxed{a = -3}$$

$$\rightarrow 4 \cdot (-3) + b = -12$$

$$-12 + b = -12$$

$$\boxed{b = 0}$$

$$f(1) = 1^3 + (-3) \cdot (1)^2 + 0 \cdot 1 + c = 2$$

$$1 - 3 + c = 2$$

$$c = 2 + 3 - 1$$

$$\boxed{c = 4}$$

$$\boxed{a = -3, b = 0 \text{ y } c = 4}$$