

EXERCICIO M13E-2495:

$$f(x) = x^4 + ax^3 + bx^2 + cx$$

La recta tangente en  $x=0$  es  $y=x$   
pte de la recta tangente  $m=1$

$$(1) f'(0) = 1$$

Tiene un extremo en  $(-1, 0)$

$$(2) f'(-1) = 0 \quad \text{Por extremo}$$

$$(3) f(-1) = 0 \quad \text{Por pasar por } (-1, 0)$$

$$(1) f'(0) = 1 \Rightarrow f'(x) = 4x^3 + 3ax^2 + 2bx + c$$

$$f'(0) = c \Rightarrow \boxed{c=1}$$

$$(2) f'(-1) = 0 \Rightarrow f'(-1) = 4(-1)^3 + 3a(-1)^2 + 2b(-1) + c =$$
$$= -4 + 3a - 2b + c \rightarrow c=1$$

$$-4 + 3a - 2b + 1 = 0$$

$$\boxed{3a - 2b - 3 = 0}$$

$$(3) f(-1) = 0 \Rightarrow f(-1) = (-1)^4 + a(-1)^3 + b(-1)^2 + c(-1) =$$
$$= 1 - a + b - c \rightarrow c=1$$

$$1 - a + b - 1 = 0$$

$$\boxed{-a + b = 0} \Rightarrow a = b$$

$$3a - 2b - 3 = 0$$

$$3a - 2a - 3 = 0$$

$$\boxed{a=3}$$

$$\boxed{b=3}$$