

**Problem statement** Suppose that  $A$ ,  $B$ ,  $C$ , and  $D$  are constants and  $f$  is the cubic polynomial  $f(x) = Ax^3 + Bx^2 + Cx + D$ . Suppose also that the tangent line to  $y = f(x)$  at  $x = 0$  is  $y = x$  and the tangent line at  $x = 2$  is given by  $y = 2x - 3$ . Find the values of  $A$ ,  $B$ ,  $C$ , and  $D$ . Then sketch the graph of  $y = f(x)$  and the two tangent lines for  $-2 \leq x \leq 4$ .