da cui
$$p(t) = 11t^3 - 66t^2 + 109t - 48$$
si ha $\quad f'(x) = p(e^x) / 3(e^x-1)(e^x-2)(e^x-3)$

e quindi

$$f'(x) > 0 \iff x \in (0, \ln 2) \cup (\ln 3, +\infty) \text{ e } p(e^x) > 0$$

D'altra parte $p'(t) = 33t^2 - 132t + 109$ ha radici
$$t_1 = \frac{66 - \sqrt{759}}{33} = 2 - \sqrt{\frac{23}{33}} \in (1,2)$$
$$t_2 = 2 + \sqrt{\frac{23}{33}} \in (2,3)$$
e poiché

$$p(1) = 6, \; p(2) = -6, \; p(3) = -18, \; p(4) = 828$$

$$\exists\, \alpha \in (t_1, 2),\; \beta \in (3,4) \text{ t.c. } p(\alpha) = p(\beta) = 0$$