

Zadatak 21. Odredi b i c tako da funkcija $f(x) = \frac{1}{x^2 + bx + c}$ ima maksimalnu vrijednost -4 za $x = \frac{3}{2}$.

Rješenje. $f'(x) = -\frac{2x + b}{(x^2 + bx + c)^2}$, $-2x - b = 0 \implies b = -2x \implies b = -2 \cdot \frac{3}{2} \implies b = -3$.

$$\frac{1}{\left(\frac{3}{2}\right)^2 - 3 \cdot \frac{3}{2} + c} = -4 \implies \frac{1}{\frac{9}{4} - \frac{9}{2} + c} = -4 \implies -9 + 18 - 4c = 1 \implies 4c = 8 \implies c = 2.$$

$$f(x) = \frac{1}{x^2 - 3x + 2}.$$