RIEŠENIE – MINITEST 2 – LS 23/24 – JAROŠ – MATEMATIKA A

9:00 : $-\frac{1}{2}x^2+6x-16=f(x)$

11:00 : $-2x^2+4x+16=f(x)$

9:00 : $f(x)=-\frac{1}{2}x^2+6x-16$, $f(x)$ je kvadrat. funkcia

$D_f=\mathbb{R}$

↳ P_y : $x=0$: $-\frac{1}{2}0^2+6\cdot 0-16=y$

$y=0+0-16=-16 \Rightarrow \boxed{P_y=[0,-16]}$ 0,25 b

P_x : $y=0$: $y=0=-\frac{1}{2}x^2+6x-16$ .... riešime kvadrat. rovnicu

$-\frac{1}{2}x^2+6x-16=0 \mid \cdot 2$

$-x^2+12x-32=0$

$(x-4)(x+8)=0$ $\quad x_1=4$; $x_2=8$

$x_1+x_2=-\frac{b}{a}=-\frac{12}{-1}=12$

$x_1\cdot x_2=\frac{c}{a}=32$

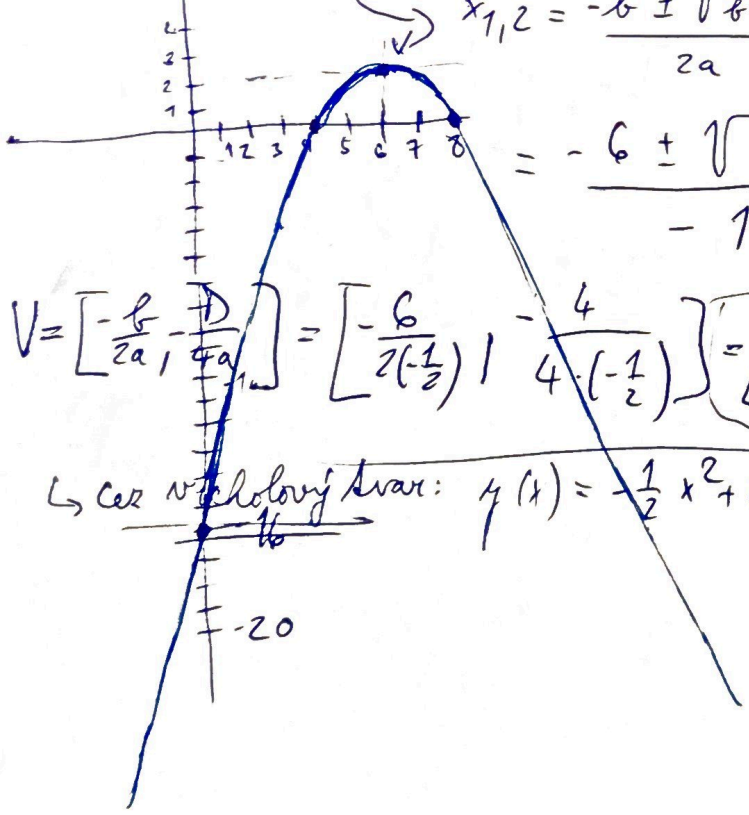
$x_{1,2}=\frac{-b\pm\sqrt{b^2-4ac}}{2a}=\frac{-6\pm\sqrt{36-4\cdot(-\frac{1}{2})\cdot(-16)}}{2\cdot(-\frac{1}{2})}=$

$=\frac{-6\pm\sqrt{4}}{-1}=\begin{cases}\frac{-6+2}{-1}=x_1=\frac{-4}{-1}=4\\ \frac{-6-2}{-1}=x_2=\frac{-8}{-1}=8\end{cases}$

$\boxed{P_{x_1}=[4,0]}$ 0,75 b

$\boxed{P_{x_2}=[8,0]}$ 0,75 b

0,75 b



$V=\left[-\frac{b}{2a},-\frac{D}{4a}\right]=\left[-\frac{6}{2(-\frac{1}{2})},-\frac{4}{4\cdot(-\frac{1}{2})}\right]=[6,2]=V$ 0,25 b

↳ cez vrcholový tvar: $f(x)=-\frac{1}{2}x^2+6x-16=-\frac{1}{2}(x^2-12x+32)$

$=-\frac{1}{2}((x-6)^2-36+32)=-\frac{1}{2}(x-6)^2+2$

($x^2-12x+36$)

↳ $\boxed{V=[6,2]}$ 0,25 b

0,75 b

11:00 : $f(x) = -2x^2 + 4x + 16$

P_y : $x = 0 : y = -2 \cdot 0^2 + 4 \cdot 0 + 16 = 16 \Rightarrow P_y = [0, 16]$

P_x : $y = 0 :$ $y(x) = 0 = -2x^2 + 4x + 16$

$-2x^2 + 4x + 16 = 0$

$-2 \cdot (x+2) \cdot (x-4) = 0$

$x_{1,2} = \frac{-(4) \pm \sqrt{16 - 4 \cdot (-2) \cdot (16)}}{2 \cdot (-2)} =$

$= \frac{-4 \pm \sqrt{144}}{-4} = \begin{cases} \frac{-4+12}{-4} = -2 \\ \frac{-4-12}{-4} = 4 \end{cases}$

$P_{x_1} = [-2, 0]$

$P_{x_2} = [4, 0]$

$V = \left[\frac{-b}{2a}, \frac{-D}{4a} \right] = \left[\frac{-4}{2 \cdot (-2)}, \frac{-144}{4 \cdot (-2)} \right] = [1, 18]$

$y(x) = -2 \cdot (x^2 - 2x - 8)$

$= -2 \cdot ((x-1)^2 - 1 - 8) = -2 \cdot (x-1)^2 + 18$

$x^2 - 2x + 1$

$\Rightarrow V = [1, 18]$