

$$g(x) = x - 4\sqrt{x} + 3$$

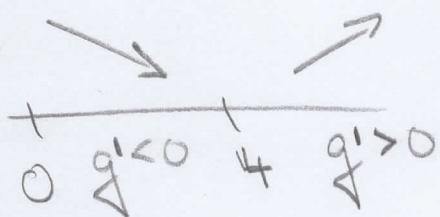
$$D_g = \langle 0, +\infty \rangle$$

$$g'(x) = 1 - 4 \cdot \frac{1}{2} x^{-\frac{1}{2}} = 1 - \frac{2}{\sqrt{x}}$$

$$g'(x) = 0 \iff 1 - \frac{2}{\sqrt{x}} = 0$$

$$1 = \frac{2}{\sqrt{x}}$$

$$|\cdot \sqrt{x}$$



$$\sqrt{x} = 2$$

$$x = 4$$

$$g'(1) = -1 < 0$$

$$g'(9) = 1 - \frac{2}{3} > 0$$

$$g(4) = 4 - 4\sqrt{4} + 3 = -1$$

lokální minimum: $[4; -1]$

$$g''(x) = (1 - 2x^{-\frac{1}{2}})' = (-2) \cdot (-\frac{1}{2}) x^{-\frac{3}{2}} = \frac{1}{\sqrt{x^3}} > 0$$

$\forall x \in D_g: g''(x) \neq 0 \implies$ funkce g nemá žádný inflexní bod
 $g''(x) > 0 \implies g$ je ryze konvexní

průsečíky: $g(0) = 0 - 4\sqrt{0} + 3 = 3$

$$P_y = [0; 3]$$

$$g(x) = 0 \iff x - 4\sqrt{x} + 3 = 0$$

$$x + 3 = 4\sqrt{x} \quad |^2$$

$$(x+3)^2 = 16x$$

$$x^2 + 6x + 9 = 16x$$

$$x^2 - 10x + 9 = 0$$

$$(x-9)(x-1) = 0$$

$$x = 9 \vee x = 1$$

$$P_{x_1} = [1; 0], P_{x_2} = [9; 0]$$

$$\lim_{x \rightarrow +\infty} (x - 4\sqrt{x} + 3) = \lim_{x \rightarrow +\infty} x \left(1 - \frac{4}{\sqrt{x}} + \frac{3}{x} \right) =$$

$$= \infty \cdot (1 - 0 + 0) = \underline{\underline{+\infty}}$$

x	0	1	4	9
g(x)	3	0	-1	0

