

Proložte pomocí metody nejmenších čtverců přímku $y = ax + b$ souborem bodů.

$$a \sum x_i^2 + b \sum x_i = \sum x_i y_i$$

$$a \sum x_i + bn = \sum y_i$$

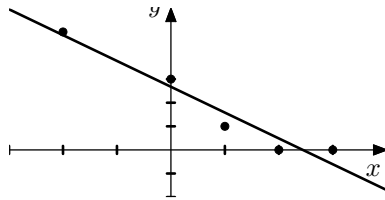
Příklad 1.
$$\begin{array}{c|c|c|c|c|c} x & 1 & 2 & 0 & -2 & 3 \\ \hline y & 1 & 0 & 3 & 5 & 0 \end{array}$$

Soustava:

$$18a + 4b = -9$$

$$4a + 5b = 9$$

$$a = -\frac{81}{74} \doteq -1,095; b = \frac{99}{37} \doteq 2,676$$



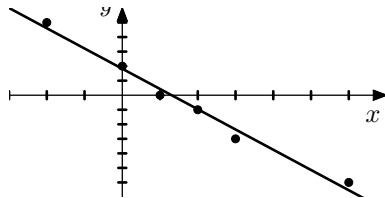
Příklad 2.
$$\begin{array}{c|c|c|c|c|c|c} x & -2 & 0 & 1 & 2 & 3 & 6 \\ \hline y & 5 & 2 & 0 & -1 & -3 & -6 \end{array}$$

Soustava:

$$54a + 10b = -57$$

$$10a + 6b = -3$$

$$a = -\frac{39}{28} \doteq -1,393; b = \frac{51}{28} \doteq 1,821$$



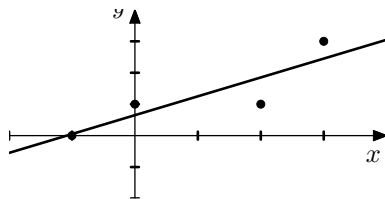
Příklad 3.
$$\begin{array}{c|c|c|c|c} x & 3 & 0 & 2 & -1 \\ \hline y & 3 & 1 & 1 & 0 \end{array}$$

Soustava:

$$14a + 4b = 11$$

$$4a + 4b = 5$$

$$a = \frac{3}{5} \doteq 0,6; b = \frac{13}{20} \doteq 0,65$$



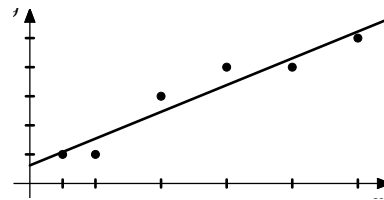
Příklad 4.
$$\begin{array}{c|c|c|c|c|c|c} x & 10 & 1 & 4 & 6 & 2 & 8 \\ \hline y & 5 & 1 & 3 & 4 & 1 & 4 \end{array}$$

Soustava:

$$221a + 31b = 121$$

$$31a + 6b = 18$$

$$a = \frac{168}{365} \doteq 0,460; b = \frac{227}{365} \doteq 0,622$$



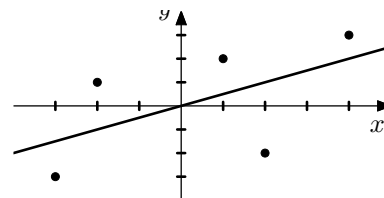
Příklad 5.
$$\begin{array}{c|c|c|c|c|c} x & 1 & 2 & -2 & -3 & 4 \\ \hline y & 2 & -2 & 1 & -3 & 3 \end{array}$$

Soustava:

$$34a + 2b = 17$$

$$2a + 5b = 1$$

$$a = \frac{1}{2}; b = 0$$



Příklad 6.
$$\begin{array}{c|c|c|c|c|c} x & -1 & 0 & 1 & 2 & 3 \\ \hline y & 3 & 3 & 3 & 1 & 0 \end{array}$$

Soustava:

$$15a + 5b = -2$$

$$5a + 5b = 7$$

$$a = -\frac{9}{10}; b = \frac{23}{10}$$

