

4.5

$$\begin{cases} 4x + 5y - 2 = 0 \\ 2y - x - 6 = 0 \end{cases} \xrightarrow{\text{m.}} \begin{cases} 4x + 5y - 2 = 0 \\ 2y - x - 6 = 0 \end{cases} \xrightarrow{(\Rightarrow)} \begin{cases} 4x + 5y - 2 = 0 \\ 2y - x - 6 = x \end{cases}$$

$$\rightarrow 4(2y - 6) + 5y - 2 = 0$$

$$\Rightarrow 8y - 24 + 5y - 2 = 0$$

$$\Rightarrow 13y = 26 \quad | :13 \Rightarrow y = 2$$

$$\Rightarrow x = 2 \cdot 2 - 6 = -2$$

4.6

$$\begin{cases} x + 8y = 19 \\ x - y = -2 \end{cases} \xrightarrow{1 \cdot (-1)} \begin{cases} x + 8y = 19 \\ -x + y = 2 \end{cases} \xrightarrow{\text{m.}} \begin{cases} x + 8y = 19 \\ -x + y = 2 \end{cases}$$

$$9y = 21 \quad | :9$$

$$\Rightarrow y = \frac{21}{9} = \frac{7}{3}$$

$$\Rightarrow x - \frac{7}{3} = -2 \quad (\Rightarrow) \quad x = \frac{7}{3} - 2 = \frac{7}{3} - \frac{6}{3} = \frac{1}{3}$$

4.12

kaluri: x , leivonen: y
 2 tuntematonta $\rightarrow$ tarvitaan 2 yhtälöä

$$\begin{cases} 5x + 5y = 27,50 \\ 8x + 10y = 50,80 \end{cases} \xrightarrow{1 \cdot (-2)} \begin{cases} 5x + 5y = 27,50 \\ -10x - 10y = -55 \end{cases} \xrightarrow{\text{m.}} \begin{cases} 5x + 5y = 27,50 \\ -10x - 10y = -55 \end{cases}$$

$$8x + 10y = 50,80$$

$$-2x \quad = -4,2 \quad | :(-2)$$

$$\Rightarrow x = \frac{-4,2}{-2} = 2,1$$

$$\Rightarrow 5 \cdot 2,1 + 5y = 27,50$$

$$\Rightarrow 10,5 + 5y = 27,50$$

$$\Rightarrow 5y = 17 \quad | :5 \Rightarrow y = \frac{17}{5} = 3,4$$

Vast. kaluri: 2,1 e, leivonen: 3,4 e

4.17

$$\begin{cases} \frac{2x+2y}{2} = 11 \quad | \cdot 2 \\ \frac{3x-y}{3} = 3 \quad | \cdot 3 \end{cases} \xrightarrow{(\Rightarrow)} \begin{cases} 2x+2y = 22 \\ 3x-y = 9 \end{cases}$$

5. Potenssi

$$a^m = \underbrace{a \cdot a \cdot \dots \cdot a}_m$$

a^m eksponentti
 a kantaluku
 m kpl

Esim. Paperin paksuus on 0,1 mm. Taitetaan paperi kahdeksan 2-kertoin. Kuinka paksu paperijäle on a) 10, b) 100 taiton jälkeen?

Ratk. alku: 0,1 mm
 1. taiton jälkeen: $2 \cdot 0,1 \text{ mm} = 0,2$