$$y = ax^2 + bx + c$$

(x_1, y_1) (x_2, y_2) (x_3, y_3)

$$a = \frac{y_3 - \frac{x_3(y_2 - y_1) + x_2 y_1 - x_1 y_2}{x_2 - x_1}}{x_3(x_3 - x_1 - x_2) + x_1 x_2}$$

$$b = \frac{y_2 - y_1}{x_2 - x_1} - a(x_1 + x_2)$$

$$c = \frac{x_2 y_1 - x_1 y_2}{x_2 - x_1} + a x_1 x_2$$

Три точки:

$(1, 2)$ $(3, 10)$ $(5, 1)$

$$a = \frac{1 - \frac{5(10-2) + 3 \cdot 2 - 1 \cdot 10}{3-1}}{5(5-1-3) + 1 \cdot 3} = \frac{1 - \frac{5 \cdot 8 + 6 - 10}{2}}{5 \cdot 1 + 3} = -\frac{17}{8}$$

$$b = \frac{10-2}{3-1} + \frac{17}{8}(1+3) = 4 + \frac{17}{2} = \frac{25}{2}$$

$$c = \frac{3 \cdot 2 - 1 \cdot 10}{3-1} - \frac{17}{8} \cdot 1 \cdot 3 = -2 - \frac{51}{8} = -\frac{67}{8}$$

$$y = -\frac{17}{8}x^2 + \frac{25}{2}x - \frac{68}{8}$$

(2)

Сухой вес не меняется = 1кг

Пусть новый вес мешка это y

$$0{,}01 \cdot 100 = 0{,}02 \cdot y$$

$$1 = 0{,}02y$$

$$y = 50$$

(3)

$$2^x = 256$$

$$\log_2 2^x = \log_2 256$$

$$(\log_2 2) \cdot x = 8$$

$$2^x = 300$$

$$\log_2 2^x = \log_2 300$$

$$(\log_2 2) \cdot x = \log_2 300 = 8{,}23$$

(4)

$\log_4 16 = 2$

$\log_5 \frac{1}{25} = -2$

$\log_{25} 5 = \frac{1}{2}$

$\log_3 \sqrt{27} = \log_3 \sqrt{3^3} = \log_3 (3^3)^{\frac{1}{2}} = \log_3 3^{\frac{3}{2}} = \frac{3}{2}$

$\log_2 12 - \log_2 3 = \log_2 \frac{12}{3} = \log_2 4 = 2$

$\log_6 12 + \log_6 3 = \log_6 36 = 2$

$e^{\ln 5} = 5^{\ln e} = 5^1 = 5$

$\frac{\log_2 225}{\log_2 15} = \log_{15} 225 = 2$

$\log_4 32 + \log_{0,1} 10 = \log_4 32 - 1 = \log_4 32 - \log_4 4 =$

$= \log_4 \frac{32}{4} = \log_4 8 = 1,5$