1) $y = ax^2 + bx + c$ (1, 2) (3, 10) (5, 1)

$$\begin{cases} 2 = a + b + c \\ 10 = 9a + 3b + c \\ 1 = 25a + 5b + c \end{cases} \Rightarrow \begin{cases} a + b = 2 - c \\ 10 = 6a + b - 2c \\ 1 = 24a + 10 - 4c \end{cases} \Rightarrow \begin{cases} a + b = 1 - c \\ c = \frac{6a - 4}{2} = 3a - 2 \\ 2 = 3a - c \\ 1 = 8a + 10 + 4(3a \end{cases}$$

$$\Rightarrow \begin{cases} b = 2 - c - a \\ c = -\frac{3 \cdot 17}{8} - 2 \\ a = -\frac{17}{8} \end{cases} \Rightarrow \begin{cases} b = 12{,}5 \\ c = -8.375 \\ a = -2.125 \end{cases}$$

$$y = -2.125x^2 + 12{,}5x - 8{,}375$$

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2) $x = 0{,}01 \cdot 100 = 1$ — чистой массы огурцов

2% — чист. масс. от всего веса

$$y = \frac{2 \cdot 1}{100} = \frac{1}{50}$$

Ответ: 50 кг.

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3) 1. $2^x = 256$

$x = \log_2 256 = 8$

2. $2^x = 300$

$x = \log_2 300$

3. $\log_8 2^{8x-4} = 4$

$4(2x-1)\log_8 2 = 4$

$(2x-1)\frac{1}{3} = 1$

$2x = 2$

$x = 1$

4. $3^{\log_3(5x-5)} = 5$

$\log_3 3 \cdot \log_3(5x-5) = \log_3 5$

$\log_3(x-1) = \log_3 5$

$x - 1 = 5$

$x = 6$

5. $x^{\log_3 x + 1} = 9$

$x \cdot x^{\log_3 x} = 9$

$3x = 9$

$x = 3$

4) 6. $\log_4 16 = 2$

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

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

9. $\log_3 \sqrt{27} = 3/2$

10. $\log_2 12 - \log_2 3 = \log_2 \frac{12}{3} = 2$

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

12. $e^{\ln 5} = 5$

13. $\frac{\log_2 225}{\log_2 15} = \frac{2\log_2 15}{\log_2 15} = 2$

14. $\log_4 32 + \log_{0,1} 10 = 5 - \log_{10} 10 = 4$

15. $9^{\log_3 \sqrt{5}} = 3^{\log_3 \sqrt{5}^2} = 5^{\log_3 3} = 5$