习题 10 参考答案

1. $\hat{b}=\sum_{i=1}^{n} x_i y_i \Big/ \sum_{i=1}^{n} x_i^2$.

2. 略.

3. $\hat{a}=67.508\ 8, \hat{b}=0.870\ 6, \hat{\sigma^2}=0.961\ 2$.

4. (1) 略; (2) $\hat{y}=13.957\ 2+12.551\ 4x$; (3) 显著; (4) 0.998 8;
(5) (11.831 5, 13.271 3).

5. (1) $\hat{y}=9.122\ 5+0.223\ 0x$; (2) 显著;
(3) 18.488 5, (17.311 8, 19.665 2).

6. (1) $\hat{y}=210.444\ 4-1.577\ 8x$; (2) 显著;
(3) (136.901 1, 283.987 7), (−2.608 9, −0.546 7), (55.692 8, 215.241 4);
(4) 价格每下降 1 角, 平均销量增加 1.577 8 kg.

7. (1) $\hat{y}=-17.357\ 5+0.221\ 9x$; (2) 显著;
(3) 进食量每增加 1 g, 平均体重增加 0.221 9 g.

8. $\hat{a}=0.009\ 0, \hat{b}=0.000\ 5, \dfrac{1}{\hat{y}}=0.009\ 0+\dfrac{0.000\ 5}{x}$.

9. $\hat{y}=20.778\ 3+19.591\ 5\ln x$.

10. $\hat{y}=0.166\ 2\mathrm{e}^{5.289\ 2x}$.

11. (1) $\hat{b}_0=51.766\ 5, \hat{b}_1=1.520\ 7, \hat{b}_2=0.662\ 9$,
$\hat{y}=51.766\ 5+1.520\ 7x_1+0.662\ 9x_2$; (2) 显著;
(3) 不显著; (4) 98.597 8, (92.973 3, 104.222 3).

12. (1) 略;
(2) $\hat{b}_0=19.286\ 3, \hat{b}_1=1.007\ 6, \hat{b}_2=-0.020\ 9$,
$\hat{y}=19.286\ 3+1.007\ 6x-0.020\ 9x^2$;
(3) 不显著.