

Algebraic Modelling: Residuals

Question 2 (Approximately 7 minutes)

2013 Exam

Figures 1 and 2 below show how the price of diamond rings varies with the size of the diamond (in carats). Figure 1 has a linear model whereas, Figure 2 has an exponential model.

Figure 1: Linear Model

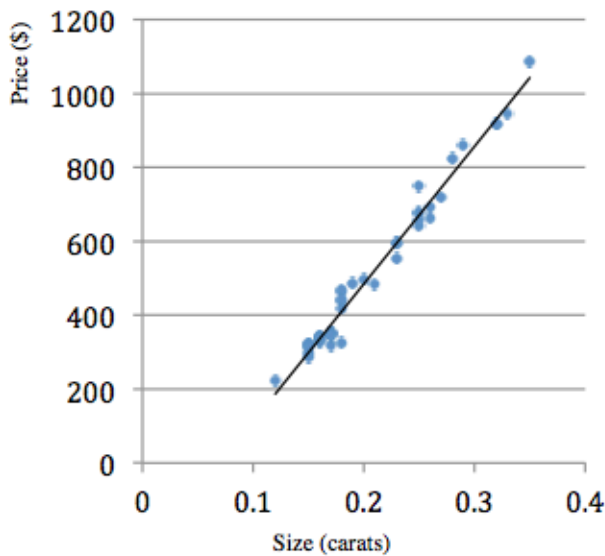


Figure 2: Exponential Model

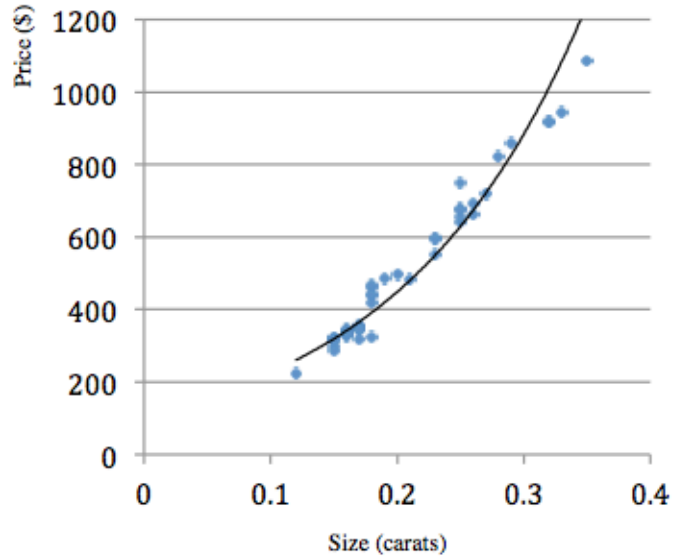


Figure 3: Residual Plot A

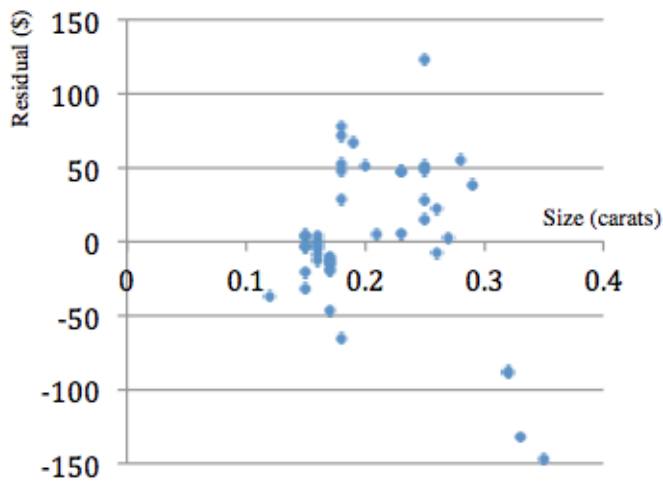
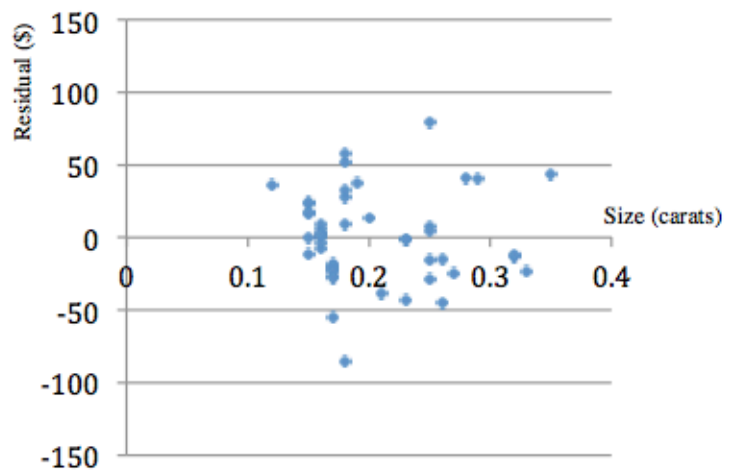


Figure 4: Residual Plot B



- (c) Residual Plot B has the point $(0.35, 43.3)$. State what this point means in terms of the variables.

Question 2 (continued)

- (a) Match each residual plot (Figures 3 and 4) with its corresponding model. Give a justification for your choice.

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- (b) Using the original data and residual plots, justify whether a linear or an exponential equation should be used to model the variation in diamond ring prices with the size of the diamond in the ring.