After a person takes medicine, the amount of drug left in the person’s body decreases over time. When testing a new drug, a pharmaceutical company develops a mathematical model to quantify this relationship. To find such a model, suppose a dose of 1000 mg of a certain drug is absorbed by a person’s bloodstream. Blood samples are taken every five hours, and the amount of drug remaining in the body is calculated.

|  |  |
| --- | --- |
| Hours Since Drug  was Administered | Amount of Drug  in Body (mg) |
| 0 | 1000 |
| 5 | 550 |
| 10 | 316 |
| 15 | 180 |
| 20 | 85 |
| 25 | 56 |
| 30 | 31 |

1. Find the best-fit model for the drug absorption data. (12)
2. Predict the amount of drug in body (mg) after 40 hours. (3)