32. ASTRONOMY The table shows the mean distance x from the sun (in astronomical units) and the period y (in years) of six planets. Draw a scatter plot of the data pairs $(\ln x, \ln y)$. Find a power model for the original data.

Planet	Mercury	Venus	Earth	Mars	Jupiter	Saturn
x	0.387	0.723	1.000	1.524	5.203	9.539
y	0.241	0.615	1.000	1.881	11.862	29.458

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33. SHORT RESPONSE The table shows the numbers of business and non-business users of instant messaging for the years 1998–2004.

Years since 1997	1	2	3	4	5	6	7
Business users (in millions)	1	2	5	7	20	40	80
Non-business users (in millions)	55	97	140	160	195	235	260

a. Find an exponential model for the number of business users over time.

b. *Explain* how to tell whether a linear, exponential, or power function best models the number of non-business users over time. Then find the best-fitting model.

34. MULTI-STEP PROBLEM The boiling point of water increases with atmospheric pressure. At sea level, where the atmospheric pressure is about 760 millimeters of mercury, water boils at 100°C. The table shows the boiling point T of water (in degrees Celsius) for several different values of atmospheric pressure P (in millimeters of mercury).

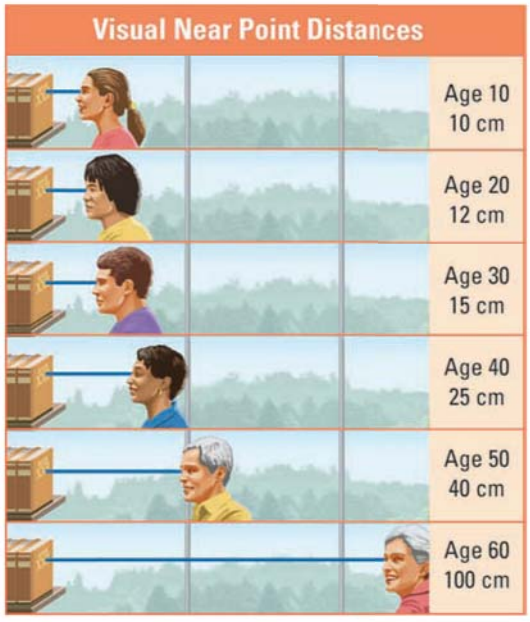
P	T
149	60
234	70
355	80
526	90
760	100
1075	110

a. Graph Draw a scatter plot of the data pairs $(\ln P, \ln T)$.

b. Model Find a power model for the original data.

c. Predict When the atmospheric pressure is 620 millimeters of mercury, at what temperature does water boil?

35. EXTENDED RESPONSE Your visual *near point* is the closest point at which your eyes can see an object distinctly. Your near point moves farther away from you as you grow older. The diagram shows the near point y (in centimeters) at age x (in years).



a. Graph Draw a scatter plot of the data pairs $(x, \ln y)$.

b. Graph Draw a scatter plot of the data pairs $(\ln x, \ln y)$.

c. Interpret Based on your scatter plots, does an exponential function or a power function best fit the original data? *Explain* your reasoning.

d. Model Based on your answer for part (c), write a model for the original data. Use your model to predict the near point for an 80-year-old person.