## **Solution 17.7**

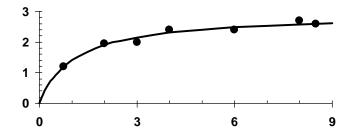
(a) We regress 1/y versus 1/x to give

$$\frac{1}{y} = 0.34154 + 0.36932 \frac{1}{x}$$

Therefore,  $\alpha_3 = 1/0.34154 = 2.927913$  and  $\beta_3 = 0.36932(2.927913) = 1.081337$ , and the saturation-growth-rate model is

$$y = 2.927913 \frac{x}{1.081337 + x}$$

The model and the data can be plotted as



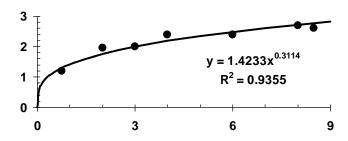
**(b)** We regress  $\log_{10}(y)$  versus  $\log_{10}(x)$  to give

$$\log_{10} y = 0.153296 + 0.311422 \log_{10} x$$

Therefore,  $\alpha_2 = 10^{0.153296} = 1.423297$  and  $\beta_2 = 0.311422$ , and the power model is

$$y = 1.423297x^{0.311422}$$

The model and the data can be plotted as



Solution continued on the next page...

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(c) Polynomial regression can be applied to develop a best-fit parabola

$$y = -0.03069x^2 + 0.449901x + 0.990728$$

The model and the data can be plotted as

