Kepler's 3rd Law:

$$\frac{r^3}{T^2} = \frac{GM}{4\pi^2} \qquad r^3 = \frac{GM}{4\pi^2} T^2$$

$y = m x$

1 Jup. Diam. $= 1.43 \times 10^8$ m

$G = 6.67 \times 10^{-11} \frac{Nm^2}{kg^2}$

Graph r^3 vs. T^2

$$m = \frac{\Delta y}{\Delta x} = \frac{GM}{4\pi^2}$$

$$\frac{\Delta y}{\Delta x} = \frac{6.43 \times 10^{27} - 7.90 \times 10^{25}}{2.0794 \times 10^{12} - 2.3388 \times 10^{10}} = \frac{6.67 \times 10^{-11} M}{4\pi^2}$$

$$3.09 \times 10^{15} = \frac{6.67 \times 10^{-11} M}{4\pi^2}$$

$M = 1.83 \times 10^{27}$ kg

Actual mass of Jupiter: 1.8986×10^{27} kg

% error: $\frac{|1.83 \times 10^{27} - 1.8986 \times 10^{27}|}{1.8986 \times 10^{27}} \times 100 = 3.61\%$