Table 4 states weather observations at different times of day a few days before the first trial and their given power.

Table 4: Power produced from a 100 W solar panel in relation to the time of day

Date	Time of day	Power output (W)	Observations
November 2^{nd}, 2015	7:30	19	Clear sky
	8:00	38	Clear sky
	9:30	75	Clear blue sky
	11:00	99	Clear blue sky
	12:30	89	Clear blue sky
	14:30	80	Clear
	15:30	62	Clear blue sky Some clouds not covering sun
	16:30	10	Sun is setting

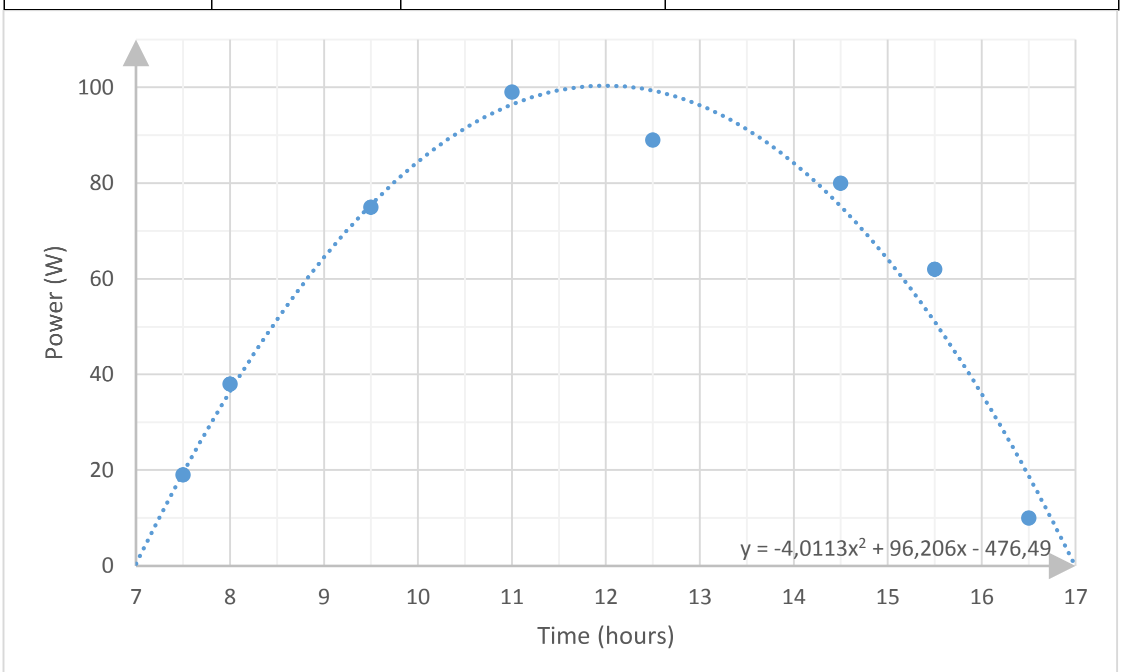

Figure 4: Power output of a 100 W solar panel versus time of day

First of all, we need to calculate the power produced during one day using the graph of power output in relation with the time of day (see figure 4). The trend line's formula is f(x) = -4.0113x^2 + 96.206x - 476.49. Calculations that lead to the integral formula are available in Appendix A.

$$\int f(x)\,dx = \int -4.0113x^2 + 96.206x^1 - 476.49\,dx$$

$$\int f(x)\,dx = -1.3371x^3 + 48.103x^2 - 476.49x + C$$

Next, we need to find the zeros of the function (time when sun starts to shine and time when sun sets).

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-96.206 \pm \sqrt{(-96.206)^2 - 4(-4.0113)(-476.49)}}{2(-4.0113)}$$

$$x_1 = 6.990\,064\,272$$

$$x_2 = 16.993\,681\,644$$

Finally, we need to replace the variable in the integrated formula to get the power generated in one day by a 100 W solar panel.

$$P = -1.3371(16.993\,681\,644)^3 + 48.103(16.993\,681\,644)^2 - 476.49(16.993\,681\,644) - \left(-1.3371(6.990\,064\,272)^3 + 48.103(6.990\,064\,272)^2 - 476.49(6.990\,064\,272)\right)$$

$$P = 669.27\,W \cdot h$$

Power output is 0.67kW$\cdot$ $h\ per\ day$