

**20. Correct. The answer is true.** The turbine will generate:

$$400 \times 24 \times 365 \times 0.25 = 876,000 \text{ kW per year}$$

Total costs are:

$$\$300,000 + \$100,000 = \$400,000$$

The real capital cost per kilowatt hour  $\$_k$  is:

$$(400,000) = \sum_{i=0}^{40} [\$_k (876,000 / (1+0.10)^i)]$$

$$\$_k = 400,000 / \{\sum_{i=0}^{40} [876,000 / (1+0.10)^i]\}$$

$$\$_k = \$0.04236 \text{ per kWh}$$

Note that this price per kWh is about 12% less than the cost above in question 18.

$$\$_{k(20 \text{ years})} = \$0.048 \Rightarrow \$0.048 * (1 - 0.1175) = \$0.04236 = \$_{k(40 \text{ years})}$$