Joe's Boat Factory

Joe runs a small boat factory. He can make ten boats per year and sell them for $25,000 each. It costs Joe $150,000 for the raw materials (fiberglass, wood, paint, and so on) to build the ten boats. Joe has invested $400,000 in the factory and equipment needed to produce the boats which are now assets that he owns: $100,000 from his own savings which was earning 5% interest and $300,000 borrowed at 10% interest. Joe can work at a competing boat factory for $70,000 per year. **Hint:** The $400,000 invested in the factory and equipment is not treated as a cost here because they represent assets of the firm, there is however a cost associated with obtaining these funds.

a. What is the total revenue Joe can earn in a year?

\[ TR = P \times Q = (25,000 \times 10) = $250,000 \]

b. What are the explicit costs Joe incurs while producing ten boats?

*The explicit costs are the costs that Joe incurs for which he makes a monetary outlay (takes money out of his pocket). The $400,000 itself is not an explicit cost because Joe owns the factory and equipment and it is therefore an asset.*

\[ \text{Explicit costs} = 150,000 + 30,000 = $180,000 \quad \text{raw materials plus interest on the loan (money borrowed)} \]

c. What are the total opportunity costs of producing ten boats (explicit and implicit)?

\[ \text{Total opportunity costs} = \text{explicit costs} + \text{implicit costs} = 180,000 + (70,000 + 5,000) = $255,000 \]

*The implicit costs are the forgone wage and the lost interest on savings*

d. How much is Joe’s accounting profit?

\[ \text{Accounting profit} = \text{TR} - \text{explicit costs} = 250,000 - 180,000 = $70,000 \]

e. How much is Joe’s economic profit?

\[ \text{Economic Profit} = \text{TR} - \text{total opportunity cost} = 250,000 - 255,000 = - $5,000 \]

f. Is it truly profitable for Joe to operate his boat factory? Briefly explain.

*In order to answer this question we look at the two options available to Joe.*

**Option 1:**
Joe can operate the boat factory and make an accounting profit of $70,000.

**Option 2:**
Joe can work for the competition and make $70,000, and also earn 5% interest on his savings for a total of $75,000.

Comparing the two options, Joe would be better off not operating the boat factory. In fact in economic terms, it would cost Joe $5,000 to operate the boat factory, which is the amount of his economic loss found in part e. Because Joe would be better off working for the competition it would not be truly profitable for Joe to operate his boat factory.