2.5 Short Run Profit Maximization - Practice Problems

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A firm has short-run costs by:

$$C(q) = q^2 + 1$$
$$MC(q) = 2q$$

Suppose you need to produce 144 units, the price of labor is \$10, and the price of capital is \$40.

1. Write an equation for fixed costs, f.

2. Write an equation for variable costs, $VC(q)$.

3. Write an equation for average fixed costs, $AFC(q)$.

4. Write an equation for average variable costs, $AVC(q)$.

5. Write an equation for average (total) costs, $AC(q)$.

6. Suppose the firm is in a competitive market, and the current market price is \$4, how many units of output maximize profits?

7. How much profit will this firm earn?

8. At what market price would the firm break even ($\pi = 0$)?

9. Below what market price would the firm shut down in the short run if it were earning losses?

10. Write out the firm's short run supply function.