# CHAPTER 5 PROJECT

## Polynomial Functions

Ace Electric Motorcycles is a new business that has just finished the design phase for its first product, and they're ready to begin production. The monthly costs for their staff, utilities, and plant lease is projected to be $729,000, and the cost to produce each motorcycle will be $4500. Their business plan projects that the revenue from selling $x$ motorcycles will be $-3x^2 + 10,000x$.

1. Given that profit is equal to revenue minus cost, what is their profit for producing and selling $x$ motorcycles per month?

2. What monthly interval of production will be profitable for the company?

3. Given that revenue is equal to the number of items sold times the price per item, what price range for the motorcycle corresponds to the profitable production interval?

4. What number of motorcycles produced and sold each month will maximize their profit?

5. Their executive team is prepared for monthly fixed costs to be as much as $300,000 higher. In that worst case scenario, what does their monthly profitable production interval become?