Name _____

Instructions: Show all work. Use exact answers unless otherwise asked to round.

1. For the quadratic function $f(x) = 3x^2 - 6x - 7$, rewrite the equation in standard (vertex) form.

2. For the equation in #1, determine the zeros of the function. Are they real? Repeating? Or complex? State the values. Find them by factoring or using the quadratic formula as needed.

3. The cost in dollars of a new T-shirt line is $C(x) = 2x + 26$, and the demand function for the price of those t-shirts is $p(x) = 30 - 2x$ (for $0 \leq x \leq 15$). Use this information to:
   a. Find the revenue function.

   b. Find the profit function.

   c. Find the number of t-shirts that should be sold to achieve maximum profit.

   d. What is the price of t-shirts needed to achieve that profit?

4. Write the solution to the inequalities in interval notation.
   a. $|1 - 2x| \geq x + 5$

   b. $5x + 4 \leq 3x^2$

5. Jeff and Toby take a trip and log their mileage and gallons of gas used. Find the line of best fit for the data. Write the equation of the best-fit line. What does the slope of the line mean in context?

Gasoline Used (Gallons)	0	9.26	19.03	28.25	36.45	44.64	53.57	62.62	71.93	81.69	90.43
Odometer (Miles)	41	356	731	1051	1347	1631	1966	2310	2670	3030	3371