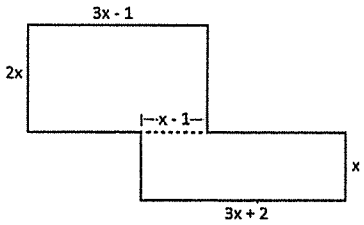
Draw a picture or diagram to model each of the given situations. Write an expression to model the situation and simplify.

1. The length of a rectangle is $2x^4 - 6x + 4$ and the width is $8x + 3$. Determine the perimeter of the rectangle.
2. The sides of a triangle are represented by $6x^2 + 4$, $5x^2 - 6x$ and $12x - 3$. Determine the perimeter of the triangle.
3. Aya is building a pen in her backyard for her pet rabbits. The length of the rectangular shaped pen is $5x^2 + 3x$ and the length is represented by $4x^2 + 4$. What is the perimeter the pen?
4. Sami is building a garden in his backyard. The garden is square shaped and has a length of $4x^4 - 2$. What is the perimeter of the garden?
5. The lengths of a correct path through a maze are represented by $3x^2 + 6$, $2x^2 - x$, $5x^3 - 3$, $4x^3 - 2x^2 + 1$ and $8x + 3$. Determine the length of the path.

6. Find the perimeter for the shape below. Explain how you calculated your answer.



Simplify each expression.

1) $(2v - 2v^2 + 4) - (8v^2 + 6v - 8) - (7 - 2v + 2v^2)$

2) $(8m^2 + 7m + 1) + (4m^2 - 7 + 5m) + (4 - 6m^2 - m)$

3) $(5 + n^2 + 2n) + (3 + 5n^2 - 2n) + (2n^2 - n + 8)$

4) $(2 + 5x^2 + 4x) + (5x - 3 + 8x^2) - (x^2 - 5 - 8x)$

5) $(4k + 6k^2 + 5) + (7 - k^2 + 2k) + (1 - 7k^2 + 8k)$

6) $(4 - k^2 + 5k) + (2k + 1 - 7k^2) - (5 - 6k + k^2)$

7) $(8 + 5m^3 - 7m) - (6m^3 + 2)$

8) $(4b - 6 + 8b^3) - (5b^3 - 6b)$

9) $(3 - 2k + 8k^3) + (5k + k^3)$

10) $(5n^3 - 7n - 5) + (5n - 7)$

11) $(5k^3 + 3k^2 + 2) - (3 - 5k^3)$

12) $(8n^2 + 8n + 6) + (5n - 2n^2)$

13) $(4b^2 - 3 - 2b^4) + (4b^2 + 4)$

14) $(p^3 - p - 2p^2) + (8p^3 + 8p^2)$

15) $(6x^3 + 7x^4 + 2x) - (7x^4 + 2x)$

16) $(3n^4 + 7n^2 + 2) - (3n^2 - 8)$

17) $(1 - 4v^3 + 2v^4) + (8v^4 - 4)$