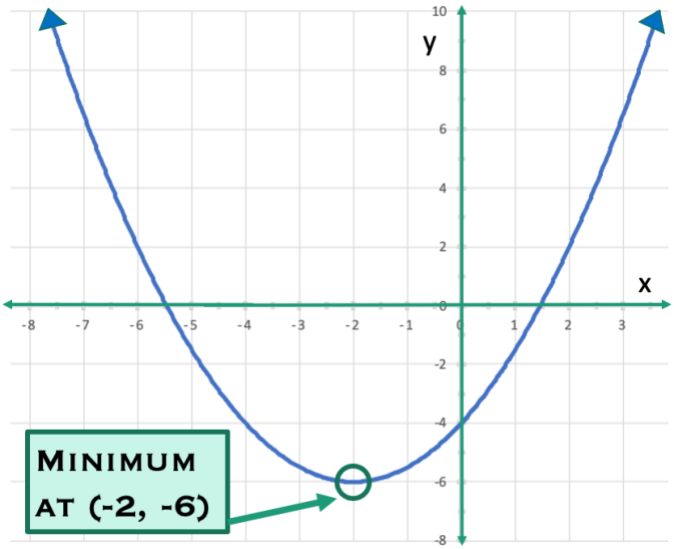
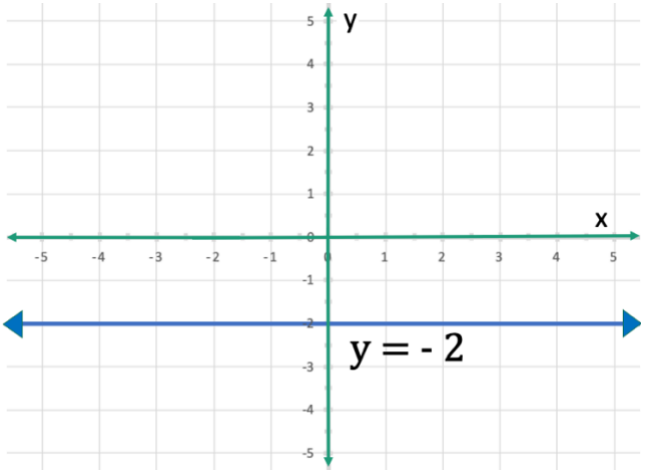
## POLYNOMIAL FUNCTIONS PROBLEMS

1. Which statemen is **TRUE**?
   A. A quadratic function has a degree of 3.
   B. A polynomial function can have more than one y-intercept.
   C. A polynomial function can have more than one x-intercept.
   D. The maximum number of turning points a function may have is equal to its degree plus one.

2. What are the domain and range of the function $y = \frac{1}{2}x^2 + 2x - 4$, shown below?




3. What is the degree of the polynomial shown below?



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4. Write (make-up) a polynomial function that will satisfy the following conditions:
   - 1 turning point
   - End behaviour: Quadrant III to Quadrant IV

5. Write (make-up) a polynomial function that will satisfy the following conditions:
   - 2 turning points
   - End behaviour: Quadrant III to Quadrant I

6. Roughly sketch a graph for a function that satisfies the following conditions:
   - 2 turning points
   - Degree 3
   - End behaviour: Quadrant II to Quadrant IV

7. What is the maximum number of x-intercepts a function of degree 5 can have? What is the minimum?

8. For each function, list the statements that would apply to the graph:
   Functions:
   a) $a(x) = 5x^2 - x + 2$
   b) $b(x) = -x^3 - x - 5$
   c) $c(x) = -2x + 7$
   d) $d(x) = -3x^5 + 2$
   e) $e(x) = 3x^4 + 2x^2 - 1$

   Statements:

   i) End behaviour goes from Quadrant II to Quadrant I.
   ii) The graph has a minimum.
   iii) The graph has a range of $y \in R$.
   iv) The graph decreases from Quadrant II to Quadrant IV.
   v) The graph is a quadratic function that opens up.

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9. $g(x)$ is an odd function. If $g(5) = 7$, then what is $g(-5)$?

10. Use these functions to answer the following question:

$$f(x) = 2x^2 - 3$$

$$g(x) = x^3 + 2x$$

$$h(x) = 4x^4$$

Which of the following would give us an EVEN function:

A. $f(x)h(x)$
B. $g(x)h(x) + f(x)$
C. $f(x)g(x)h(x)$
D. $f(x) + g(x) + h(x)$