

## 2.12 Pre-Exam: Polynomial functions

### A1-A.APR.1 Add, subtract, and multiply polynomials

- Find the sum in standard form  $(x^3 - 7x^2 + 2x + 5) + (2x^3 + 9x^2 - 3x - 5)$
- Find the difference  $f(x) - g(x)$  as a polynomial in standard form, given  
 $f(x) = x^4 + 2x^2 - 3$  and  $g(x) = 2x^3 + 2x^2 - 3x + 3$ .
- Multiply the two polynomials  $f(x) = 2x^2 - 3$  and  $g(x) = 4x^3 - x + 1$ . First complete the grid and then collect terms to find the product as a polynomial in standard form.

	$4x^3$	$-x$	1
$2x$			
$-3$			

### A1-A.APR.3 Identify zeros of polynomials when factorizations are available.

- Select all solutions to the equation  $(x + 1)(3x - 2) = 0$ .
 

(a) $x = -\frac{3}{2}$	(c) $x = \frac{2}{3}$	(e) $x = -1$
(b) $x = 1$	(d) $x = -\frac{2}{3}$	(f) $x = \frac{3}{2}$
- Write down the solutions to the equation  $x(x - 3)(2x + 8)(x + 3) = 0$ .
- Write down a polynomial in factored form having roots of  $x = -3, 4, 10$ .

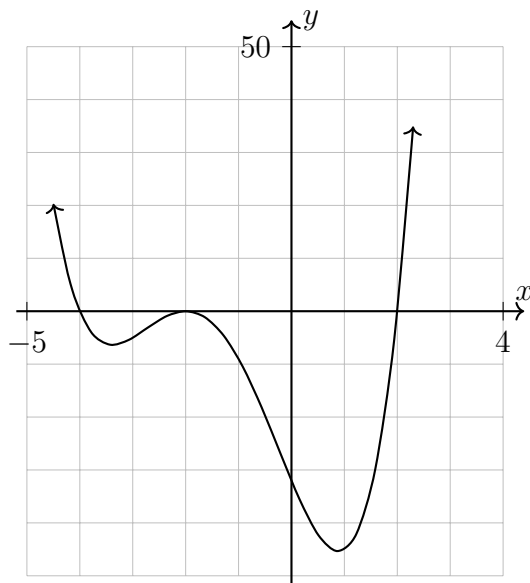
**A2-F.IF.7c Graph polynomials, identify zeros, end behavior**

7. Below is a graph of the polynomial  $f(x)$ .

What is the degree of the function?

Which of the following could be its equation?

- (a)  $f(x) = (x + 2)(x - 4)(x - 2)^2$
- (b)  $f(x) = (x - 2)(x - 4)(x + 2)^2$
- (c)  $f(x) = (x + 2)(x + 4)(x - 2)^2$
- (d)  $f(x) = (x - 2)(x + 4)(x + 2)^2$



8. Given the polynomial  $g(x) = -2x^3 - 2x^2 + 10x - 6$ , graphed below.

- (a) What is the leading coefficient?
- (b) Write down the constant term.
- (c) What are roots of the function?
- (d) What factor has a multiplicity of 2?
- (e) Write down the  $y$ -intercept as an ordered pair.
- (f) What term do we use to describe the point  $p$  on the plot?
- (g) What is the end behavior?

