

2.11 Do Now Quiz: Graphing polynomials

1. Sketch the graphs

$$g(x) = x^3 - 14x + 2$$

$$h(x) = x^3 + 11x^2 + 32x + 28$$

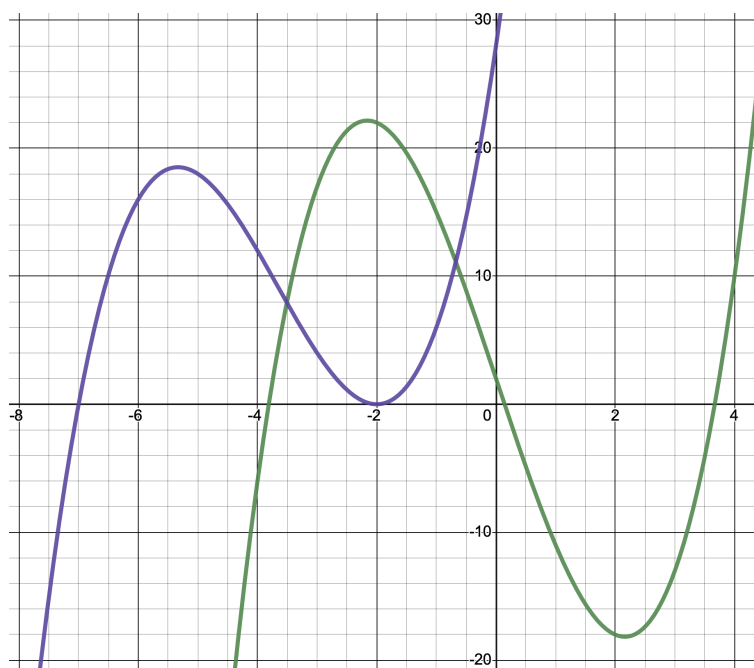
2. What are the zeros of

$$f(x) = (x - 2)^2(x + 7)(x - 8)$$

3. What is the degree of $f(x)$?

4. What is the end behavior of $g(x)$?

5. What are the factors of $h(x)$? Which factor has a multiplicity of 2?



6. Evaluate each polynomial for the given value of x .

$$\begin{array}{ll} \text{(a)} & f(x) = -x^3 + 12x^2 - x + 4, \quad x = 0 \\ & f(0) = \end{array} \qquad \begin{array}{ll} \text{(b)} & g(x) = 2x^3 + 11x^2 - 3x + 15 \\ & g(-8) = \end{array}$$

7. The polynomial function A , shown below, is used to model the value of an investment account. Three deposits were made which earned interest annually.

$$A(x) = 200x^5 + 300x^4 + 150x^3$$

- (a) How much was the first deposit, and how long ago was it made?

- (b) If the polynomial is evaluated for $x = 1.04$, what interest rate would that represent *as a percentage*?

- (c) Find the value of $A(1.04)$ to the *nearest cent*.

A2-F.BF.2 Write arithmetic and geometric sequences with recursive formulas

8. Write a recursive formula for each sequence. Use subscript notation.

$$\begin{array}{ll} \text{(a)} & 3, -6, 12, -24, 48, \dots \\ \text{(b)} & \frac{3}{4}, \frac{5}{4}, \frac{7}{4}, \frac{9}{4}, \dots \end{array}$$

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

9. Find the sum in standard form $(x^3 - 4x^2 + 2x + 16) + (5x^3 - 2x^2 - 3x - 12)$

10. Find the difference $f(x) - g(x)$ as a polynomial in standard form, given

$$f(x) = x^4 + 2x^3 - x - 9 \text{ and } g(x) = 2x^3 + x^2 - 3x - 11.$$

11. Multiply the two polynomials $f(x) = 3x - 2$ and $g(x) = x^2 - 5x + 4$. First complete the grid and then collect terms to find the product as a polynomial in standard form.

	x^2	$-5x$	4
$3x$			
-2			

12. Select all of the expressions that are equivalent to $x^2 - 5x + 6$.

(a) $(x - 2)(x + 3)$

(e) $(x - 6)(x + 5)$

(b) $(x - 3)(x - 2)$

(f) $(x + 3)(x + 2)$

(c) $(x - 5)(x + 6)$

(g) $(x - 2)(x - 3)$

(d) $(x + 2)(x - 3)$

(h) $x^2 + 5x + 6$

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

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

(a) $x = -\frac{1}{2}$

(d) $x = -0.5$

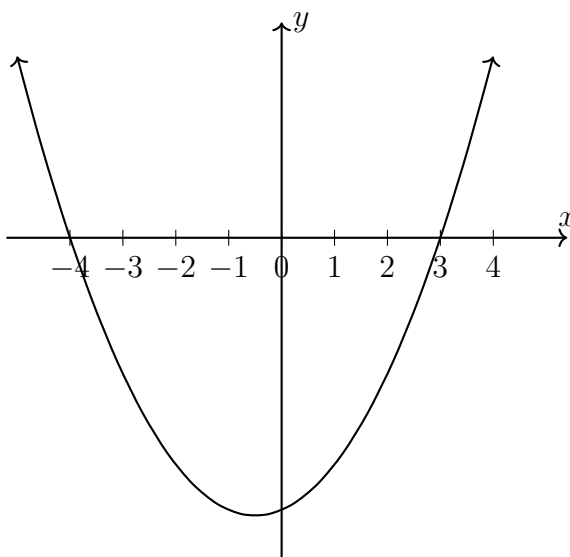
(b) $x = 3$

(e) $x = -3$

(c) $x = -2$

(f) $x = \frac{1}{2}$

14. Here is the graph of a quadratic function. Which of the following could be its equation?



(a) $y = (x + 3)(x - 4)$

(c) $y = (x + 3)(x + 4)$

(b) $y = (x - 3)(x + 4)$

(d) $y = (x - 3)(x - 4)$

15. Find all of the values of x that make the equation true, the solutions.

$$x(x + 5)(2x - 9)(x - 13) = 0.$$

16. Given the polynomial function $f(x) = 2x^4 + 5x^3 - x^2 + 3x - 6$.

- (a) What is the degree of the polynomial?
- (b) Write down the leading coefficient of f .
- (c) What is the value of the constant term?
- (d) Find $f(1)$.

17. The graph of a polynomial function is shown below.

- (a) Write down the x -intercepts, the solutions to $f(x) = 0$.
- (b) Write down the y -intercept as an ordered pair.
- (c) What term do we use to describe the point p on the plot?

