BECA / Huson / Algebra 2: Polynomials First and last name:
24 October 2024 Section:

2.19 Test: Polynomials

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

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

   (a) $f(x) = 2x^3 - x^2 - 5x + 9$

   $f(0) =$

   (b) $g(x) = 4x^2 + x - 7$

   $g(1) =$

2. Write the sum in standard form $(x^3 + 12x^2 - 7x + 3) + (2x^3 - 3x^2 - 2x - 6)$.

3. Find the difference $f(x) - g(x)$ as a polynomial in standard form, with $f(x) = x^3 - 2x^2 + 3x + 5$ and $g(x) = x^2 - 2x - 5$.

4. Select the expression that is equivalent to $x^2 - 7x + 10$.

   (a) $(x - 2)(x - 5)$

   (b) $(x + 2)(x + 5)$

   (c) $(x - 2)(x + 5)$

   (d) $(x + 2)(x - 5)$

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

5. Write down the solutions to the equation $-2x(x+5)(x-9)(2x+1)=0$.

6. The polynomial p is a function of x. The graph of p has zeros at -4, $-\frac{2}{3}$, 0 and 9. Select **all** the expressions that could represent p.

   (a) $3x(x-4)(x+\frac{2}{3})(x+9)$
   (b) $-x(x+4)(x+\frac{2}{3})(x-9)$
   (c) $-3x(x+4)(3x+2)(x-9)$
   (d) $3x(x+4)(2x-3)(x-9)$
   (e) $-3x(x+4)(3x+2)(x-9)^2$
   (f) $x(x+4)(x+\frac{2}{3})(x-9)^2$

7. Which expression is equivalent to $2(3x+4)(x-1)(x-3)$?

   (a) $6x^3-16x^2-14x+24$
   (b) $6x^3-4x^2-34x-24$
   (c) $3x^3-8x^2-7x+12$
   (d) $6x^3+20x^2-2x-24$

8. Let f be a polynomial function of x where $f(x)=2x^3+5x^2-28x-15$. If $x-3$ is a factor of f, write an equation for f as a product of linear factors.

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9. Let P be a polynomial function of x, and $P(x) = x^4 - dx^3 + 8x^2 - 14x + 16$. If $x - 2$ is a factor of the polynomial, what is the value of d? Explain or show how you know.

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

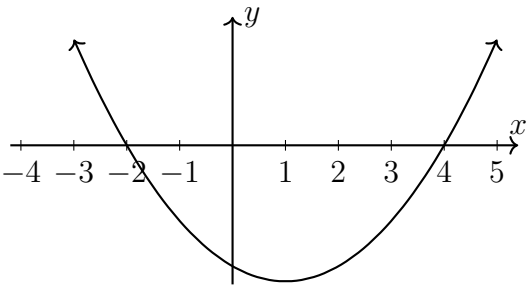
10. Here is the graph of a quadratic function. Which of the following could be its equation?

(a) $y = (x + 2)(x - 4)$

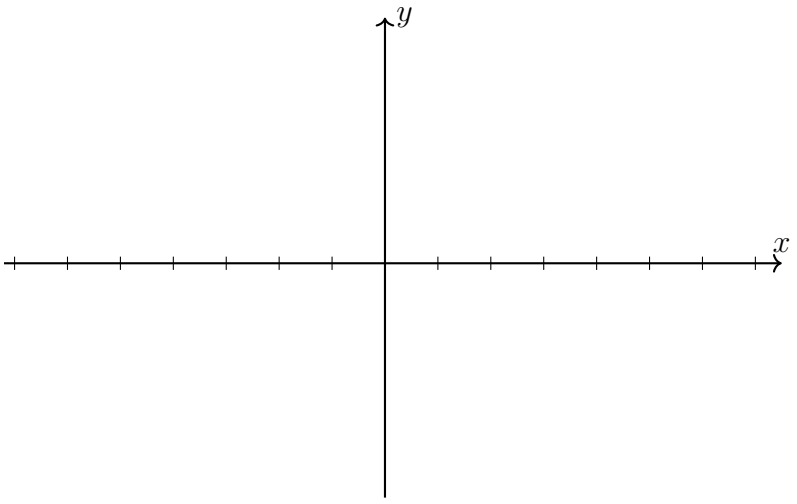
(b) $y = (x - 2)(x + 4)$

(c) $y = (x + 2)(x + 4)$

(d) $y = (x - 2)(x - 4)$



11. Let $j(x) = -2(3x + 4)(x - 1)(x - 3)^2$ be a polynomial function.



(a) Sketch a graph of the function.

(b) Name all horizontal and vertical intercepts of the graph.

(c) State the end behavior of j.

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

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

    (a) $1, 2, 4, 8, 16, \ldots$

    (b) $\frac{1}{3}, \frac{2}{9}, \frac{8}{27}, \frac{16}{81}, \ldots$

13. Write a recursive definition of the arithmetic sequence a.

n	a_n
1	5
2	-5
3	-15

6.EE.b: Solve one-variable equations

14. Use the function $f(x) = \frac{1}{2}x - 9$ to answer the questions.

    (a) What is $f(0)$?

    (b) Find $f(6)$

    (c) Solve for x if $f(x) = -2$.

15. Fill in the blank. The beginning of a new marking period is a good time to "Turn over a new _____."