

2026-2027 FCPS End of Unit Assessment Blueprint

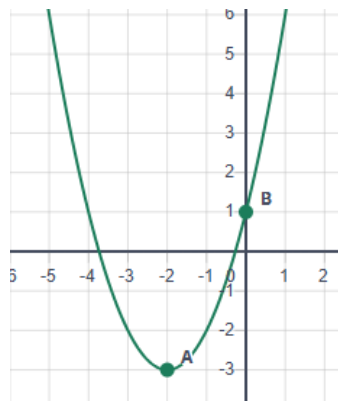
[Pear Assessment Shortcut Links](#)

Content Area: Mathematics

Grade: Algebra 2

Unit 2: Quadratic Functions and Equations / Polynomial Functions (enVision Topics 2&3)

Calculator Use:
Scientific and Graphing Calculator for all questions

Standard	Question #	Item Type	Answer	Points
KY.HS.A.19	1	MS	A and B	2
KY.HS.F.1	2	Math Entry	$y = (x + 2)^2 - 3$	1
KY.HS.F.1 KY.HS.F.8		Graphing		1
KY.HS.A.19	3	MC	A $x = \frac{7+\sqrt{29}}{2}$ and $x = \frac{7-\sqrt{29}}{2}$	1
KY.HS.A.21	4	MC	C (2)	1
KY.HS.A.2 KY.HS.F.1	5	MC	B	1
KY.HS.A.2	6	Math Entry	$25 - 16x^6$	1
KY.HS.A.21 KY.HS.A.24	7	Numeric Entry	1.9 and -1.2	1
KY.HS.F.8	8	MC	C	1
KY.HS.A.19	9	MC	B	1
KY.HS.F.8	10	Numeric Entry	$y = -(x + 4)^2$	1
KY.HS.A.24	11	Math Input	Part A: 4 seconds Part B: 2 times Part C: See below	Part a) 1 point Part b) 1 point Part c) 2 points

		Sample Answer The ball reaches a height of 5 meters at 0.8 seconds and 3.2 seconds. To find when the ball reaches 5 meters, I set the height function equal to 5, resulting in the equation $5 = -2(t - 2)^2 + 8$. First, I subtracted 8 from both sides to get $-3 = -2(t - 2)^2$, and then divided by -2 to isolate the squared binomial, which gave me $1.5 = (t - 2)^2$. Next, I took the square root of both sides, resulting in $\sqrt{1.5} = t - 2$ (or approximately ± 1.22). Finally, adding 2 to both sides gives approximately $2 - 1.22 = 0.78$ seconds and $2 + 1.22 = 3.22$ seconds. Rounded to the nearest tenth, these times are 0.8 seconds (as the ball is rising) and 3.2 seconds (as the ball is falling). Score Points - Score 2 points: Both correct times and correct explanation or work shown. - Score 1 Point: At least one correct time and attempt at a correct explanation/work shown. - Score 0: Response is completely incorrect, irrelevant, or blank.		
KY.HS.F.1.c KY.HS.A.3	12	MC	E	1
KY.HS.A.2	13	Math Input	x=3 y=1	2
KY.HS.F.4c Graph polynomial functions, identifying zeros when suitable factorizations are available and showing end behavior.	14	MC	C	1
	15	Dropdown	∞ $-\infty$	2
KY.HS.F.1.c	16	MS	Part A: C D E Part B: 4 degrees	Part A: 3 (1 pt each) Part B: 1
KY.HS.A.7 Identify roots of polynomials when suitable factorizations are available. Know these roots become the zeros (x-intercepts) for the corresponding polynomial function.	17	Math Input Math Input	Part A $f(x) = 2x^4 + 4x^3 - 26x^2 - 28x + 48$ Part B Degree: 4, Leading Coefficient: 2, Constant: 48, Zeros: -4, -2, 1, 3	Part A: 1 Part B: 4 (1 pt each)
	18	MC	D	1
Total Points				31

FCPS End of Unit Assessment
Algebra 2, Math, Unit 2

1. Use square roots to solve the equation $x^2 + 25 = 0$. Select **TWO** correct answers.
- a. $-5i$
 - b. $5i$
 - c. 5
 - d. -5

2. Let $f(x) = x^2 + 4x + 1$.

Part A

Express the function in vertex form.

$y =$ _____

Part B

Sketch the graph of the equation.

3. Solve $x^2 - 7x + 5 = 0$.

- a. $x = \frac{7+\sqrt{29}}{2}$ and $x = \frac{7-\sqrt{29}}{2}$
- b. $x = 7 + \sqrt{29}$ and $x = 7 - \sqrt{29}$
- c. $x = -5$ and $x = -1$
- d. $x = \frac{7+\sqrt{69}}{2}$ and $x = \frac{7-\sqrt{69}}{2}$

4. Determine the number of real solutions of the system.

$$\begin{cases} y = x^2 + 8 \\ y = x + 15 \end{cases}$$

- a. 0
- b. 1
- c. 2
- d. 3

5. Which of the following expressions is (are) a factor of $3x^2 + 20x - 63$?

- I. $x - 9$
- II. $3x - 7$

- a. I only
- b. II only
- c. I and II
- d. Neither I nor II

6. Use Polynomial Identities to multiply: $(5 - 4x^3)(5 + 4x^3)$

7. Solve the equation $-3x^2 - 2x + 4 = -4x - 3$ by writing a linear-quadratic system and solving using the intersection feature of a graphing calculator. Round to the nearest tenth (one decimal place).

$y =$ _____

8. Identify the translations of the parent function $f(x) = x^2$ that gives $g(x) = (x + 2)^2 - 6$

- a. up 2 units, left 6 units
- b. up 6 units, right 2 units
- c. down 6 units, left 2 units
- d. down 2 units, right 6 units

9. Use the quadratic formula to solve $0 = x^2 - 10x + 30$.

- a. $x = 5 + i$ and $x = 5 - i$
- b. $x = 5 + i\sqrt{5}$ and $x = 5 - i\sqrt{5}$
- c. $x = -6 - i\sqrt{6}$ and $x = -5 + i\sqrt{6}$
- d. $x = -5 - i\sqrt{5}$ and $x = -5 + i\sqrt{5}$

10. The graph of $g(x)$ is $f(x)$ translated to the left 4 units and reflected across the x-axis. What is the function rule for $g(x)$?

$y =$ $(x$ $)^2$

Dropdown = Plus/Minus

Box = Enter Numbers

11. Deon kicks a ball into the air. The height, h , in meters, of the ball at time t seconds is modeled by the function:
- $$h(t) = -2(t - 2)^2 + 8$$

Part A

Using your graphing calculator, use the graph of $h(t)$ to identify when the ball will hit the ground, using correct units.

Part B

How many times will the ball reach a height of 5 meters?

Part C

At what time(s) does the ball reach the height of 5 meters? Round to the nearest tenth. Show your work.

Enter your answer and your work in the space provided.

12. What is the maximum number **of terms** a fourth-degree polynomial function **in standard form** can have?

- a. 1
- b. 2
- c. 3
- d. 4
- e. 5

13. What is the vertex of the function $f(x) = x^2 - 6x + 10$?

14. Which statement is true of the function $f(x) = x^2 + 6x^3 - 4 + 2x^5$?

- a. The function is positive for all values of x .
- b. The end behavior of the graph of $f(x)$ is similar to that of $g(x) = -x^3$.
- c. The graph has exactly one x -intercept.
- d. The function is decreasing for all real numbers.

15. Use the leading coefficient and degree of the polynomial function $f(x) = x^3 - 7x^2 + 10x$ to determine the end behavior of its graph.

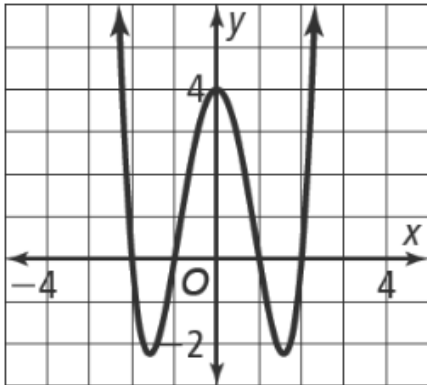
As $x \rightarrow \infty$, $y \rightarrow$ _____

(Drop down options: $-\infty$, 0, ∞)

As $x \rightarrow -\infty$, $y \rightarrow$ _____

(Drop down options: $-\infty$, 0, ∞)

16. The graph of a function f is shown.



Part A

Identify the x -values of the zeros of the function.

- a. -3
- b. -2
- c. -1.5
- d. 1.5
- e. 2
- f. 3

Part B

What is the degree of this function?

17. Given $f(x) = -26x^2 + 48 + 2x^4 + 4x^3 - 28x$.

Part A

Write $f(x)$ in standard form.

$f(x) =$ _____

Part B

Identify the degree, leading coefficient, the constant term, and the zeros of the function.

18. Choose the graph of $f(x) = x^3 + 2x^2 - 3x$.

