

Algebra 1 · Functions, Domain, Range and Function Notation · Test Answer Key

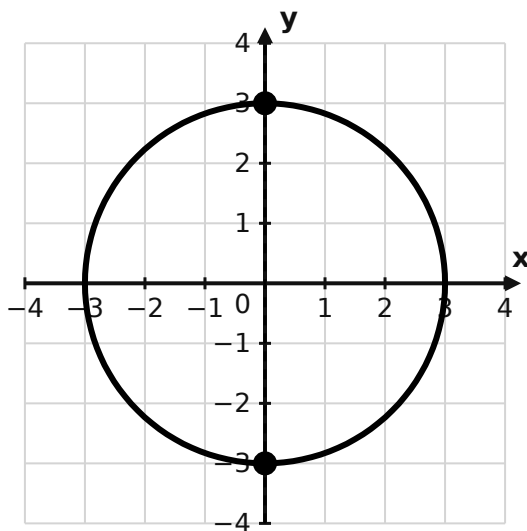
Common Core F-IF.A.1, F-IF.A.2, F-IF.B.5 · mathovore.fr

Use this answer key with the scoring notes to grade the test out of 20 points. Partial credit is described under each question. Award full credit for any correct method, even when it differs from the one shown, and check that interpretations include units.

Algebra 1 Common Core: F-IF.A.1 · F-IF.A.2 · F-IF.B.5

Question 1: Is it a function? (3 points)

- a. The inputs $-1, 0, 1, 2$ are all different. **Yes.** (The repeated output 2 is allowed.)
- b. The input 6 appears twice, with outputs 3 and 8. **No.**
- c. The line $x=0$ meets the circle at $(0,3)$ and $(0,-3)$. **No.**



The vertical line $x=0$ meets the circle at $(0,3)$ and $(0,-3)$.

Scoring: 1 point per part for the correct answer with a valid reason. An answer of Yes or No with no reason earns half credit.

Question 2: Evaluate a quadratic (2 points)

- a. $f(-2) = 4 + 8 + 1 = 13$. **13**
- b. $f(5) = 25 - 20 + 1 = 6$. **6**

Scoring: 1 point per correct value. Give half credit if the substitution is right but there is an

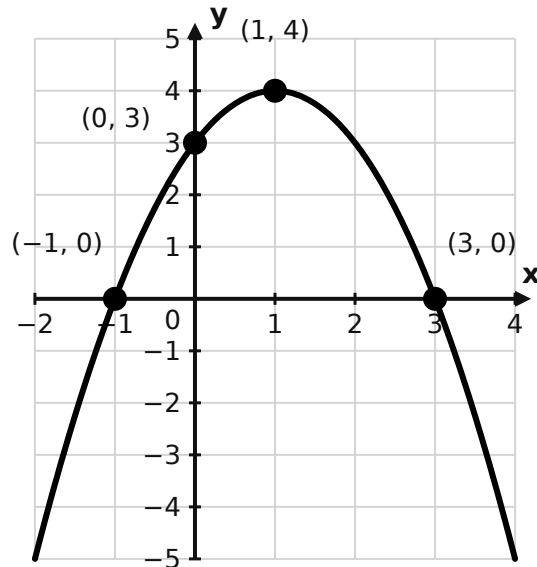
arithmetic slip.

Question 3: Evaluate and solve (2 points)

- a. $g(-4) = -3(-4) + 8 = 12 + 8 = 20$. **20**
- b. $-3x + 8 = -7$, $-3x = -15$, $x = 5$. **$x = 5$**

Scoring: 1 point per part. In part (b), award the point for the correct value of x .

Question 4: Read values from a graph (3 points)



Reading the graph: $f(0) = 3$, $f(1) = 4$, and $f(x) = 0$ at $x = -1$ and $x = 3$.

- a. $f(0) = 3$
- b. $f(1) = 4$
- c. **$x = -1$ and $x = 3$**

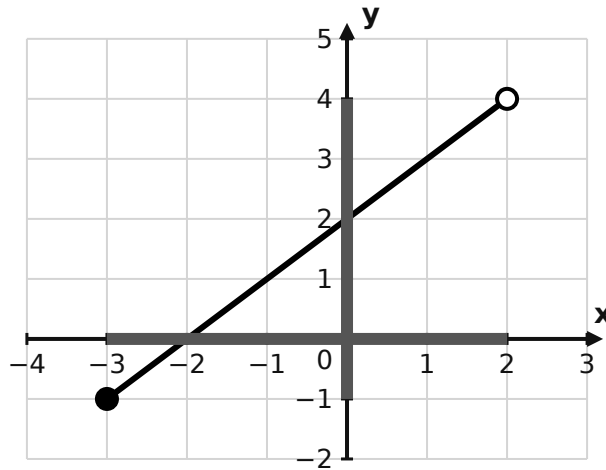
Scoring: 1 point per part. In part (c), both values are needed for the point.

Question 5: Ticket profit (2 points)

- a. $P(40) = 240 - 150 = 90$. Selling 40 tickets gives a profit of \$90.
- b. $6n - 150 = 0$ gives $6n = 150$, so $n = 25$. Selling 25 tickets gives no profit and no loss (break-even).

Scoring: 1 point per part: 0.5 for the value and 0.5 for a correct interpretation with units.

Question 6: Domain and range of a graph (3 points)



Domain $-3 \leq x < 2$ (thick on the x -axis). Range $-1 \leq y < 4$ (thick on the y -axis).

- $-3 \leq x < 2$
- $-1 \leq y < 4$
- Continuous:** the graph is connected, so every value between the endpoints is allowed.

Scoring: 1 point per part. In parts (a) and (b), the point requires the correct open and closed ends.

Question 7: Notebook sale (2 points)

- Only whole numbers make sense. $\{1, 2, 3, 4, 5, 6, 7, 8\}$
- Multiply each by 2.5. $\{2.50, 5.00, 7.50, 10.00, 12.50, 15.00, 17.50, 20.00\}$ dollars

Scoring: 1 point per part. An answer that lists all numbers from 2.50 to 20.00 earns 0 for part (b).

Question 8: Rocket launch (3 points)

- $h(3) = -144 + 192 = 48$. **48 ft**
- $h(4) = -256 + 256 = 0$. **4 seconds after launch, the rocket is back on the ground.**
- The flight lasts from $t = 0$ to $t = 4$. The highest point is $h(2) = -64 + 128 = 64$. **Domain** $0 \leq t \leq 4$; **range** $0 \leq h \leq 64$.

Scoring: 1 point per part. In part (c), both the domain and the range must be correct for the point.

Total
20 points