

Algebra 2 · Interpreting and Comparing Functions · Quiz

Common Core F-IF.B.4, F-IF.B.5, F-IF.B.6, F-IF.C.8a, F-IF.C.9 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This algebra 2 function interpretation quiz asks 10 multiple-choice questions on interpreting and comparing functions, and each answer comes with a short explanation.

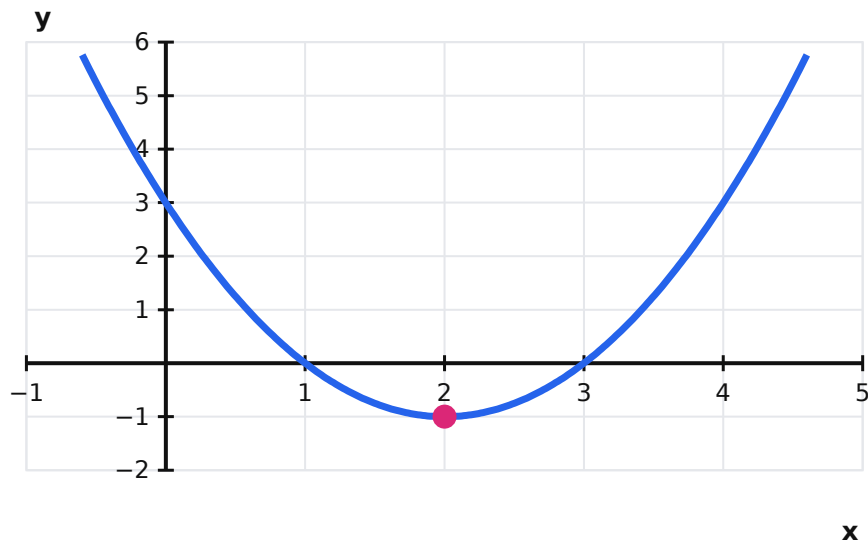
Ten multiple-choice questions check key features of graphs, domain in context, average rate of change, completing the square, factored form and comparing functions. Exactly one option is correct in each question, and the explanation points out the usual mistake.

Algebra 2 Common Core: F-IF.B.4 · F-IF.B.5 · F-IF.B.6 · F-IF.C.8a · F-IF.C.9

Questions

Question 1

The graph shows a parabola with vertex $(2, -1)$. On which interval is the function decreasing?



- A. $(2, \infty)$
- B. $(1, 3)$
- C. $(-\infty, 2)$
- D. $(-\infty, 1)$

Question 2

A rectangular pen has area $A(w) = w(30 - w)$ square feet, where w is the width in feet. What is

the domain in this context?

- A. all real numbers
- B. $0 < w < 30$
- C. $w \geq 0$
- D. $0 \leq w \leq 15$

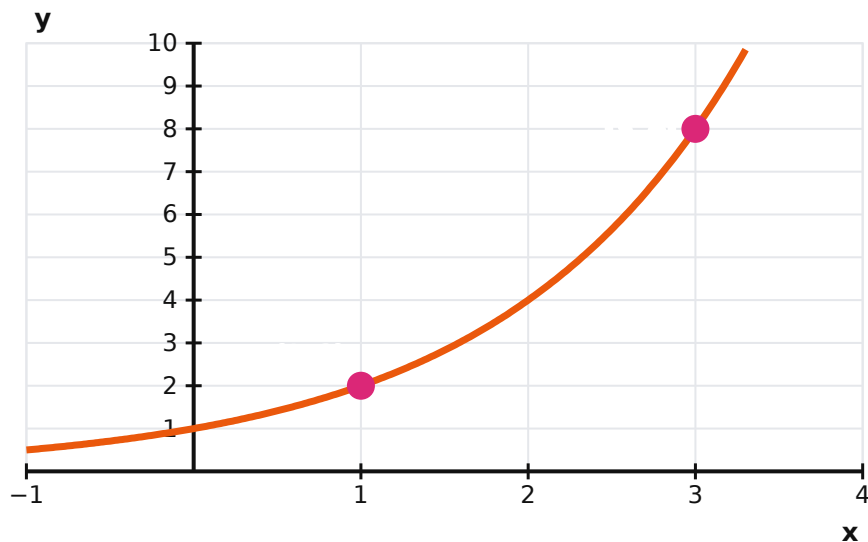
Question 3

Find the average rate of change of $f(x) = x^2 + 1$ on $[1, 3]$.

- A. 8
- B. 5
- C. 2
- D. 4

Question 4

The graph of an exponential function passes through $(1, 2)$ and $(3, 8)$. What is its average rate of change from $x = 1$ to $x = 3$?



- A. 3
- B. 6
- C. 4
- D. 5

Question 5

Complete the square: $x^2 + 10x + 7$ equals which expression?

- A. $(x+5)^2 + 7$
- B. $(x+5)^2 - 18$
- C. $(x+10)^2 - 93$
- D. $(x+5)^2 - 25$

Question 6

The function $f(x) = (x-4)(x+2)$ is in factored form. Which feature does this form show directly?

- A. The vertex $(1, -9)$
- B. The y-intercept -8
- C. The maximum value
- D. The zeros 4 and -2

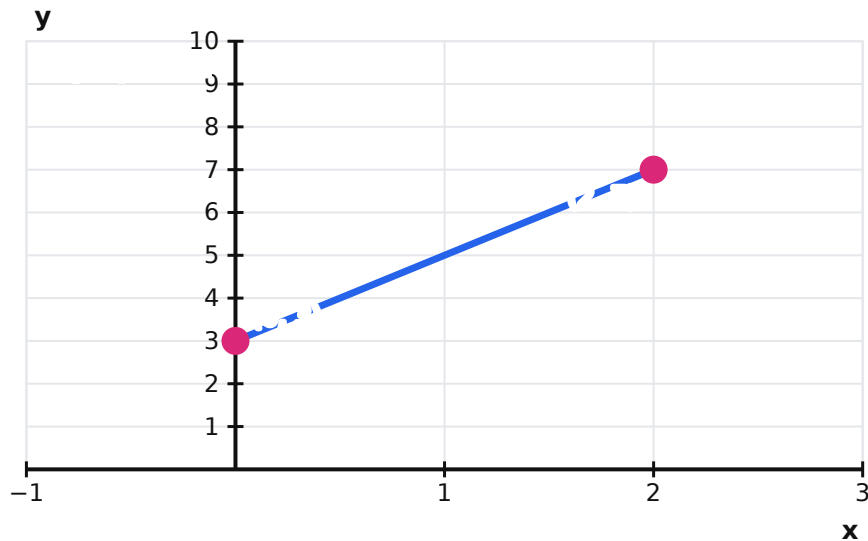
Question 7

What are the minimum value and its location for $f(x) = x^2 - 6x + 5$?

- A. -4 at $x = -3$
- B. 4 at $x = 3$
- C. -4 at $x = 3$
- D. -3 at $x = -4$

Question 8

The line graph of f passes through $(0,3)$ and $(2,7)$. Let $g(x) = 3^x$. Which function has the greater average rate of change on $[0,2]$?



- A. f (rate 2 versus 1)
- B. They are equal
- C. g (rate 4 versus 2)
- D. Cannot be determined

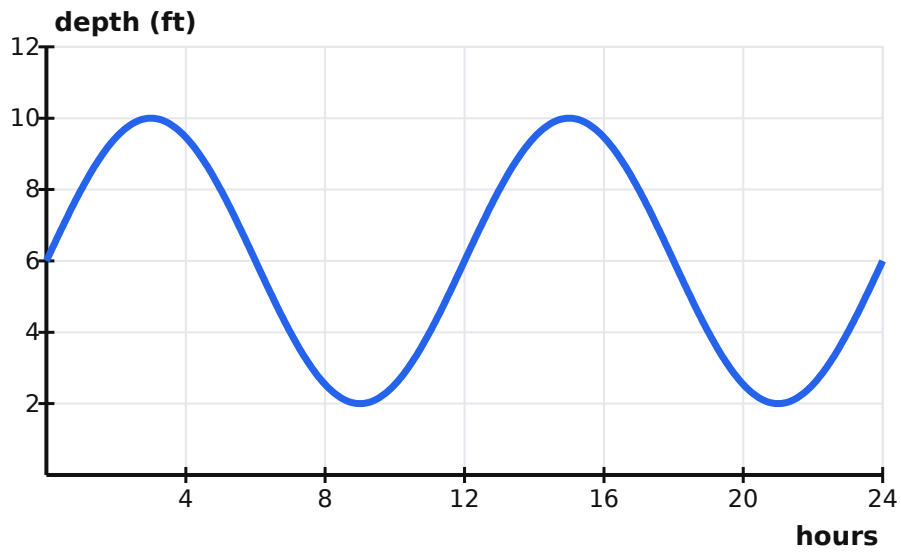
Question 9

A club's profit is $P(x) = -x^2 + 10x - 16$ dollars when tickets cost x dollars. What is the greatest possible profit?

- D. $-$

Question 10

The tide depth $d(t) = 6 + 4\sin\left(\frac{\pi t}{6}\right)$ is graphed below. What is its period?



- A. 6 hours
- B. 24 hours
- C. 4 hours
- D. 12 hours

Answer key

1. **C** - The graph falls as it moves left to right until the vertex at $x=2$. The interval $(1,3)$ is where the values are negative, not where the graph falls.
2. **B** - Width and length $30-w$ must both be positive, so w is between 0 and 30. The formula alone accepts any real number, but the context does not.
3. **D** - $f(3)=10$ and $f(1)=2$, so $\frac{10-2}{3-1}=4$. The value 8 forgets to divide by the interval length.
4. **A** - $\frac{8-2}{3-1}=3$. The value 6 is the change in output without dividing by 2, and 5 is the average of the two outputs, which is not a rate.
5. **B** - Half of 10 is 5, and $5^2=25$, so $x^2+10x+7=(x+5)^2-25+7=(x+5)^2-18$. Forgetting to subtract 25 gives the first wrong option.
6. **D** - Setting each factor to 0 gives the zeros $x=4$ and $x=-2$. The vertex and y-intercept need more work, and this parabola opens up, so it has a minimum, not a maximum.
7. **C** - $f(x)=(x-3)^2-4$, so the vertex is $(3,-4)$. The sign inside the parentheses is opposite to the sign of the x-coordinate of the vertex.
8. **C** - The line has rate $\frac{7-3}{2}=2$ and $g: \frac{9-1}{2}=4$. The graph of f starting higher (3 versus 1) does not make its rate greater.
9. **A** - $P(x)=-(x-2)(x-8)$ has zeros 2 and 8, so the maximum is at $x=5$ and $P(5)=-25+50-16=9$. The number 5 is the best price, not the profit.
10. **D** - The graph completes one full cycle every 12 hours, so two cycles fit in 24 hours. The number 4 is the amplitude, not the period.

How does this quiz work?

Read each question, choose one answer among A, B, C and D, then check it: a short explanation appears after every answer. Your score out of 10 is shown at the end, and you can restart the quiz as often as you like.

What should you review before the quiz?

Reread the key facts of the lesson and the worked example. If a question is hard, go back to the matching part of the lesson, then try the quiz again. Write your work on scrap paper: most mistakes come from skipping a step, not from the idea itself.

Remember:

- Standards F-IF.B.4, F-IF.B.5, F-IF.B.6, F-IF.C.8a and F-IF.C.9 on interpreting and comparing functions.
- The domain of a model is limited by the context, such as time in the air or whole numbers of tickets.
- Average rate of change on $[a,b]$ is $\frac{f(b)-f(a)}{b-a}$, the slope of a secant line.

- Factored form $a(x-r)(x-s)$ shows zeros; vertex form $a(x-h)^2+k$ shows the extreme value k .
- Compare two functions by finding the same feature (intercept, maximum, rate of change) from each representation.

How to use this algebra 2 function interpretation quiz

Retake this algebra 2 function interpretation quiz until every answer is right, then move on to the worksheet and the test.

