# Advanced Function Language and Transformations

Function operations, composition, inverses, one-to-one behavior, and transformations.

Name _____ Date _____

32 main | 2-up grid | 12 pages | visible side quests

**Completion Reward**

Shown here as a small pack artifact, not a preview destination.

**1. If f(3) = 11, what does that tell you?**

| x | f(x) |
|---|---|
| 3 | 11 |
| 5 | f(5) |

The statement f(3) = 11 means input 3 is paired with output 11.

A. The slope of the graph is 11 at x = 3.
B. The inverse sends 11 to 3 automatically.
C. The function has domain 11.
D. The output is 11 when the input is 3.

1.1. If f(x) = x + 2 and g(x) = 3x, what is f(g(2))?

A. 6
B. 8
C. 10
D. 12

1.2. A function has an inverse only if it is:

A. one-to-one
B. quadratic
C. constant
D. undefined at 0

1.3. What does y = f(x) + 3 do to a graph?

A. shifts left 3
B. shifts right 3
C. shifts up 3
D. shifts down 3

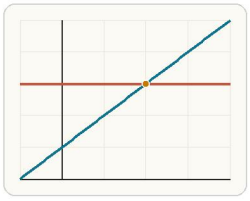
1.4. What does y = f(x - 2) do to a graph?

A. shifts left 2
B. shifts right 2
C. shifts up 2
D. reflects across the y-axis

1.5. Which expression is the reciprocal of f(x)?

A. f^-1(x)
B. 1 / f(x)
C. f(x) - 1
D. -f(x)

**2. What must be true if a function is one-to-one?**



If a function is one-to-one, different inputs must produce different outputs, which appears as a graph hit at most once by a horizontal line.

A. Every input must be positive.
B. The graph must pass through the origin.
C. The function must be linear.
D. Different inputs produce different outputs.

2.1. An inverse function does what?

A. adds 1 to every output
B. undoes the original function
C. takes a reciprocal
D. reflects only across the x-axis

2.2. Why must an inverse function start from a one-to-one function?

A. so each output comes from only one input
B. so the graph is curved
C. so the slope is positive
D. so the intercept is 0

2.3. Which expression is the inverse notation?

A. 1 / f(x)
B. f^-1(x)
C. -f(x)
D. f(x) - 1

2.4. To start finding the inverse of y = 2x + 5, a good first step is:

A. swap x and y
B. square both sides
C. set x = 0
D. find the slope

2.5. The graph of an inverse reflects the original graph across:

A. the x-axis
B. the y-axis
C. the line y = x
D. the origin

**3. Which expression names the inverse function of f?**

| x | f(x) | 1 / f(x) |
|---|---|---|
| 2 | 5 | 1 / 5 |
| 4 | 9 | 1 / 9 |

The inverse function reverses the mapping, while a reciprocal changes the output value itself.

A. f^-1(x)
B. 1 / f(x)
C. -f(x)
D. f(x - 1)

3.1. An inverse function does what?

A. adds 1 to every output
B. undoes the original function
C. takes a reciprocal
D. reflects across the x-axis

3.2. Why must a function be one-to-one to have an inverse that is also a function?

A. so each output comes from only one input
B. so the slope is positive
C. so the graph is curved
D. so the intercept is 0

3.3. Which notation names the inverse function?

A. 1 / f(x)
B. f^-1(x)
C. -f(x)
D. f(x)^-1 only

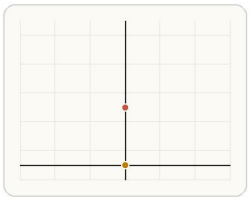
3.4. To start finding the inverse of y = 4x - 7, what should you do first?

A. swap x and y
B. factor the equation
C. find the slope
D. set y = 0

3.5. A function and its inverse reflect across:

A. the x-axis
B. the y-axis
C. the line y = x
D. the origin

**4. Compared to y = x^2, what does y = x^2 + 4 do?**



Adding 4 outside the quadratic raises every y-value by 4 without changing the horizontal shape.

A. Shifts the graph right 4 units
B. Shifts the graph up 4 units
C. Reflects the graph over the x-axis
D. Stretches the graph horizontally

4.1. What does y = f(x) - 4 do?

A. shift left 4
B. shift right 4
C. shift down 4
D. reflect across the x-axis

4.2. What does y = f(x + 3) do?

A. shift left 3
B. shift right 3
C. shift up 3
D. stretch vertically

4.3. What does y = 2f(x) do?

A. doubles all outputs
B. shifts right 2
C. cuts all outputs in half
D. changes the domain only

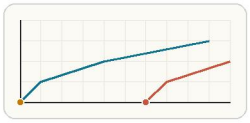
4.4. What does y = -f(x) do?

A. reflect across the y-axis
B. reflect across the x-axis
C. shift down 1
D. make the graph inverse

4.5. Which change affects the graph horizontally?

A. adding outside the function
B. multiplying outside the function
C. changing the input expression
D. adding to the output after graphing

**5. Compared to y = sqrt(x), what does y = sqrt(x - 6) do?**



Subtracting inside the input shifts the whole graph to the right.

A. Shifts the graph right 6 units
B. Shifts the graph left 6 units
C. Shifts the graph up 6 units
D. Reflects the graph over the y-axis

5.1. What does y = f(x) - 4 do?

A. shift left 4
B. shift right 4
C. shift down 4
D. reflect across the x-axis

5.2. What does y = f(x + 3) do?

A. shift left 3
B. shift right 3
C. shift up 3
D. stretch vertically

5.3. What does y = 2f(x) do?

A. doubles all outputs
B. shifts right 2
C. cuts all outputs in half
D. changes the domain only

5.4. What does y = -f(x) do?

A. reflect across the y-axis
B. reflect across the x-axis
C. shift down 1
D. make the graph inverse

5.5. Which change affects the graph horizontally?

A. adding outside the function
B. multiplying outside the function
C. changing the input expression
D. adding to the output after graphing

**6. What is the best first step to find the inverse of y = 3x + 7?**

| original x | original y |
|---|---|
| 0 | 7 |
| 2 | 13 |

Finding an inverse starts by swapping the input and output roles.

A. Take the reciprocal of both sides.
B. Swap x and y.
C. Square both sides.
D. Set y equal to 0.

6.1. An inverse function does what?

A. adds 1 to every output
B. undoes the original function
C. takes a reciprocal
D. reflects across the x-axis

6.2. Why must a function be one-to-one to have an inverse that is also a function?

A. so each output comes from only one input
B. so the slope is positive
C. so the graph is curved
D. so the intercept is 0

6.3. Which notation names the inverse function?

A. 1 / f(x)
B. f^-1(x)
C. -f(x)
D. f(x)^-1 only

6.4. To start finding the inverse of y = 4x - 7, what should you do first?

A. swap x and y
B. factor the equation
C. find the slope
D. set y = 0

6.5. A function and its inverse reflect across:

A. the x-axis
B. the y-axis
C. the line y = x
D. the origin

**7. A student says f^-1(x) always means 1 / f(x). What is the mistake?**

A. They should multiply by x first.
B. They should change the base of the function.
C. Inverse function notation is not the same as reciprocal notation.
D. They should always square the function.

7.1. An inverse function does what?

A. adds 1 to every output
B. undoes the original function
C. takes a reciprocal
D. reflects across the x-axis

7.2. Why must a function be one-to-one to have an inverse that is also a function?

A. so each output comes from only one input
B. so the slope is positive
C. so the graph is curved
D. so the intercept is 0

7.3. Which notation names the inverse function?

A. 1 / f(x)
B. f^-1(x)
C. -f(x)
D. f(x)^-1 only

7.4. To start finding the inverse of y = 4x - 7, what should you do first?

A. swap x and y
B. factor the equation
C. find the slope
D. set y = 0

7.5. A function and its inverse reflect across:

A. the x-axis
B. the y-axis
C. the line y = x
D. the origin

**8. If f(x) = 2x + 1 and g(x) = x^2, find (f + g)(2). Answer with a number.**

8.1. If f(x) = x + 2 and g(x) = 3x, what is (f + g)(2)?

A. 8
B. 10
C. 12
D. 14

8.2. If f(x) = 5x and g(x) = x + 1, what is (f - g)(2)?

A. 5
B. 7
C. 8
D. 9

8.3. If f(x) = x + 1 and g(x) = 2x, what is (fg)(2)?

A. 4
B. 6
C. 8
D. 12

8.4. If f(x) = x + 6 and g(x) = x, what is (f/g)(2)?

A. 2
B. 3
C. 4
D. 5

8.5. For (f/g)(x), what must be true?

A. f(x) cannot be 0
B. g(x) cannot be 0
C. x must be positive
D. the functions must be linear

**9. If f(x) = 3x - 4 and g(x) = x + 2, find (f - g)(5). Answer with a number.**

9.1. If f(x) = x + 2 and g(x) = 3x, what is (f + g)(2)?

A. 8
B. 10
C. 12
D. 14

9.2. If f(x) = 5x and g(x) = x + 1, what is (f - g)(2)?

A. 5
B. 7
C. 8
D. 9

9.3. If f(x) = x + 1 and g(x) = 2x, what is (fg)(2)?

A. 4
B. 6
C. 8
D. 12

9.4. If f(x) = x + 6 and g(x) = x, what is (f/g)(2)?

A. 2
B. 3
C. 4
D. 5

9.5. For (f/g)(x), what must be true?

A. f(x) cannot be 0
B. g(x) cannot be 0
C. x must be positive
D. the functions must be linear

**10. If f(x) = x + 1 and g(x) = 2x, find (fg)(3). Answer with a number.**

10.1. If f(x) = x + 2 and g(x) = 3x, what is (f + g)(2)?

A. 8
B. 10
C. 12
D. 14

10.2. If f(x) = 5x and g(x) = x + 1, what is (f - g)(2)?

A. 5
B. 7
C. 8
D. 9

10.3. If f(x) = x + 1 and g(x) = 2x, what is (fg)(2)?

A. 4
B. 6
C. 8
D. 12

10.4. If f(x) = x + 6 and g(x) = x, what is (f/g)(2)?

A. 2
B. 3
C. 4
D. 5

10.5. For (f/g)(x), what must be true?

A. f(x) cannot be 0
B. g(x) cannot be 0
C. x must be positive
D. the functions must be linear

**11. If f(x) = x + 6 and g(x) = 2x, find (f / g)(3). Answer with a number.**

11.1. If f(x) = x + 2 and g(x) = 3x, what is (f + g)(2)?

A. 8
B. 10
C. 12
D. 14

11.2. If f(x) = 5x and g(x) = x + 1, what is (f - g)(2)?

A. 5
B. 7
C. 8
D. 9

11.3. If f(x) = x + 1 and g(x) = 2x, what is (fg)(2)?

A. 4
B. 6
C. 8
D. 12

11.4. If f(x) = x + 6 and g(x) = x, what is (f/g)(2)?

A. 2
B. 3
C. 4
D. 5

11.5. For (f/g)(x), what must be true?

A. f(x) cannot be 0
B. g(x) cannot be 0
C. x must be positive
D. the functions must be linear

**12. If f(x) = 2x + 3 and g(x) = x - 5, find f(g(8)). Answer with a number.**

12.1. If f(x) = x + 1 and g(x) = 2x, what is (f + g)(3)?

A. 7
B. 9
C. 10
D. 12

12.2. If f(x) = x + 2 and g(x) = x - 1, what is (fg)(3)?

A. 4
B. 5
C. 10
D. 15

12.3. If f(x) = x + 6 and g(x) = x, what is (f/g)(3)?

A. 1
B. 2
C. 3
D. 4

12.4. If f(x) = x + 4 and g(x) = 2x, what is f(g(1))?

A. 2
B. 4
C. 6
D. 8

12.5. How is f(g(x)) different from f(x) + g(x)?

A. composition uses one output as the next input
B. they always mean the same thing
C. composition always multiplies
D. addition is only for graphs

**13. If f(x) = 2x + 3 and g(x) = x - 5, find g(f(4)). Answer with a number.**

13.1. If f(x) = x + 1 and g(x) = 2x, what is (f + g)(3)?

A. 7
B. 9
C. 10
D. 12

13.2. If f(x) = x + 2 and g(x) = x - 1, what is (fg)(3)?

A. 4
B. 5
C. 10
D. 15

13.3. If f(x) = x + 6 and g(x) = x, what is (f/g)(3)?

A. 1
B. 2
C. 3
D. 4

13.4. If f(x) = x + 4 and g(x) = 2x, what is f(g(1))?

A. 2
B. 4
C. 6
D. 8

13.5. How is f(g(x)) different from f(x) + g(x)?

A. composition uses one output as the next input
B. they always mean the same thing
C. composition always multiplies
D. addition is only for graphs

**14. If h(x) = x^2 - 1, find h(h(2)). Answer with a number.**

14.1. If f(x) = x + 1 and g(x) = 2x, what is (f + g)(3)?

A. 7
B. 9
C. 10
D. 12

14.2. If f(x) = x + 2 and g(x) = x - 1, what is (fg)(3)?

A. 4
B. 5
C. 10
D. 15

14.3. If f(x) = x + 6 and g(x) = x, what is (f/g)(3)?

A. 1
B. 2
C. 3
D. 4

14.4. If f(x) = x + 4 and g(x) = 2x, what is f(g(1))?

A. 2
B. 4
C. 6
D. 8

14.5. How is f(g(x)) different from f(x) + g(x)?

A. composition uses one output as the next input
B. they always mean the same thing
C. composition always multiplies
D. addition is only for graphs

**15. If f(x) = x + 4 and g(x) = x - 1, find (f / g)(5). Answer with a number.**

15.1. If f(x) = x + 1 and g(x) = 2x, what is (f + g)(3)?

A. 7
B. 9
C. 10
D. 12

15.2. If f(x) = x + 2 and g(x) = x - 1, what is (fg)(3)?

A. 4
B. 5
C. 10
D. 15

15.3. If f(x) = x + 6 and g(x) = x, what is (f/g)(3)?

A. 1
B. 2
C. 3
D. 4

15.4. If f(x) = x + 4 and g(x) = 2x, what is f(g(1))?

A. 2
B. 4
C. 6
D. 8

15.5. How is f(g(x)) different from f(x) + g(x)?

A. composition uses one output as the next input
B. they always mean the same thing
C. composition always multiplies
D. addition is only for graphs

**16. If f(x) = 2x - 1, find f^-1(9). Answer with a number.**

16.1. An inverse function does what?

A. adds 1 to every output
B. undoes the original function
C. takes a reciprocal
D. reflects only across the x-axis

16.2. Why must an inverse function start from a one-to-one function?

A. so each output comes from only one input
B. so the graph is curved
C. so the slope is positive
D. so the intercept is 0

16.3. Which expression is the inverse notation?

A. 1 / f(x)
B. f^-1(x)
C. -f(x)
D. f(x) - 1

16.4. To start finding the inverse of y = 2x + 5, a good first step is:

A. swap x and y
B. square both sides
C. set x = 0
D. find the slope

16.5. The graph of an inverse reflects the original graph across:

A. the x-axis
B. the y-axis
C. the line y = x
D. the origin

**17. If g(x) = 5x + 2, find g^-1(17). Answer with a number.**

17.1. An inverse function does what?

A. adds 1 to every output
B. undoes the original function
C. takes a reciprocal
D. reflects only across the x-axis

17.2. Why must an inverse function start from a one-to-one function?

A. so each output comes from only one input
B. so the graph is curved
C. so the slope is positive
D. so the intercept is 0

17.3. Which expression is the inverse notation?

A. 1 / f(x)
B. f^-1(x)
C. -f(x)
D. f(x) - 1

17.4. To start finding the inverse of y = 2x + 5, a good first step is:

A. swap x and y
B. square both sides
C. set x = 0
D. find the slope

17.5. The graph of an inverse reflects the original graph across:

A. the x-axis
B. the y-axis
C. the line y = x
D. the origin

**18. For h(x) = (x - 3)^2 + 1, find h(5). Answer with a number.**

18.1. If f(x) = x + 2 and g(x) = 3x, what is f(g(2))?

A. 6
B. 8
C. 10
D. 12

18.2. A function has an inverse only if it is:

A. one-to-one
B. quadratic
C. constant
D. undefined at 0

18.3. What does y = f(x) + 3 do to a graph?

A. shifts left 3
B. shifts right 3
C. shifts up 3
D. shifts down 3

18.4. What does y = f(x - 2) do to a graph?

A. shifts left 2
B. shifts right 2
C. shifts up 2
D. reflects across the y-axis

18.5. Which expression is the reciprocal of f(x)?

A. f^-1(x)
B. 1 / f(x)
C. f(x) - 1
D. -f(x)

**19. For p(x) = -|x| + 4, find p(-2). Answer with a number.**

19.1. If f(x) = x + 2 and g(x) = 3x, what is f(g(2))?

A. 6
B. 8
C. 10
D. 12

19.2. A function has an inverse only if it is:

A. one-to-one
B. quadratic
C. constant
D. undefined at 0

19.3. What does y = f(x) + 3 do to a graph?

A. shifts left 3
B. shifts right 3
C. shifts up 3
D. shifts down 3

19.4. What does y = f(x - 2) do to a graph?

A. shifts left 2
B. shifts right 2
C. shifts up 2
D. reflects across the y-axis

19.5. Which expression is the reciprocal of f(x)?

A. f^-1(x)
B. 1 / f(x)
C. f(x) - 1
D. -f(x)

**20. If f(x) = x + 1 and g(x) = sqrt(x), find f(g(9)). Answer with a number.**

20.1. If f(x) = x + 2 and g(x) = 3x, what is f(g(2))?

A. 6
B. 8
C. 10
D. 12

20.2. A function has an inverse only if it is:

A. one-to-one
B. quadratic
C. constant
D. undefined at 0

20.3. What does y = f(x) + 3 do to a graph?

A. shifts left 3
B. shifts right 3
C. shifts up 3
D. shifts down 3

20.4. What does y = f(x - 2) do to a graph?

A. shifts left 2
B. shifts right 2
C. shifts up 2
D. reflects across the y-axis

20.5. Which expression is the reciprocal of f(x)?

A. f^-1(x)
B. 1 / f(x)
C. f(x) - 1
D. -f(x)

**21. If f(x) = 2x and g(x) = x + 5, find g(f(4)). Answer with a number.**

21.1. If f(x) = x + 1 and g(x) = 2x, what is (f + g)(3)?

A. 7
B. 9
C. 10
D. 12

21.2. If f(x) = x + 2 and g(x) = x - 1, what is (fg)(3)?

A. 4
B. 5
C. 10
D. 15

21.3. If f(x) = x + 6 and g(x) = x, what is (f/g)(3)?

A. 1
B. 2
C. 3
D. 4

21.4. If f(x) = x + 4 and g(x) = 2x, what is f(g(1))?

A. 2
B. 4
C. 6
D. 8

21.5. How is f(g(x)) different from f(x) + g(x)?

A. composition uses one output as the next input
B. they always mean the same thing
C. composition always multiplies
D. addition is only for graphs

**22. If f(x) = x^2 and g(x) = x + 1, find (f / g)(3). Answer with a number.**

22.1. If f(x) = x + 2 and g(x) = 3x, what is f(g(2))?

A. 6
B. 8
C. 10
D. 12

22.2. A function has an inverse only if it is:

A. one-to-one
B. quadratic
C. constant
D. undefined at 0

22.3. What does y = f(x) + 3 do to a graph?

A. shifts left 3
B. shifts right 3
C. shifts up 3
D. shifts down 3

22.4. What does y = f(x - 2) do to a graph?

A. shifts left 2
B. shifts right 2
C. shifts up 2
D. reflects across the y-axis

22.5. Which expression is the reciprocal of f(x)?

A. f^-1(x)
B. 1 / f(x)
C. f(x) - 1
D. -f(x)

**23. If f(x) = x - 2 and g(x) = 3x, find f(g(6)). Answer with a number.**

23.1. If f(x) = x + 1 and g(x) = 2x, what is (f + g)(3)?

A. 7
B. 9
C. 10
D. 12

23.2. If f(x) = x + 2 and g(x) = x - 1, what is (fg)(3)?

A. 4
B. 5
C. 10
D. 15

23.3. If f(x) = x + 6 and g(x) = x, what is (f/g)(3)?

A. 1
B. 2
C. 3
D. 4

23.4. If f(x) = x + 4 and g(x) = 2x, what is f(g(1))?

A. 2
B. 4
C. 6
D. 8

23.5. How is f(g(x)) different from f(x) + g(x)?

A. composition uses one output as the next input
B. they always mean the same thing
C. composition always multiplies
D. addition is only for graphs

**24. If f(x) = 2x + 1 and g(x) = x^2, write (f + g)(x). Answer as an equation.**

24.1. If f(x) = x + 2 and g(x) = 3x, what is (f + g)(2)?

A. 8
B. 10
C. 12
D. 14

24.2. If f(x) = 5x and g(x) = x + 1, what is (f - g)(2)?

A. 5
B. 7
C. 8
D. 9

24.3. If f(x) = x + 1 and g(x) = 2x, what is (fg)(2)?

A. 4
B. 6
C. 8
D. 12

24.4. If f(x) = x + 6 and g(x) = x, what is (f/g)(2)?

A. 2
B. 3
C. 4
D. 5

24.5. For (f/g)(x), what must be true?

A. f(x) cannot be 0
B. g(x) cannot be 0
C. x must be positive
D. the functions must be linear

**25. If f(x) = 5x - 2 and g(x) = x + 4, write (f - g)(x). Answer as an equation.**

25.1. If f(x) = x + 2 and g(x) = 3x, what is (f + g)(2)?

A. 8
B. 10
C. 12
D. 14

25.2. If f(x) = 5x and g(x) = x + 1, what is (f - g)(2)?

A. 5
B. 7
C. 8
D. 9

25.3. If f(x) = x + 1 and g(x) = 2x, what is (fg)(2)?

A. 4
B. 6
C. 8
D. 12

25.4. If f(x) = x + 6 and g(x) = x, what is (f/g)(2)?

A. 2
B. 3
C. 4
D. 5

25.5. For (f/g)(x), what must be true?

A. f(x) cannot be 0
B. g(x) cannot be 0
C. x must be positive
D. the functions must be linear

**26. If f(x) = 3x - 1 and g(x) = x^2, write f(g(x)). Answer as an equation.**

26.1. If f(x) = x + 1 and g(x) = 2x, what is (f + g)(3)?

A. 7
B. 9
C. 10
D. 12

26.2. If f(x) = x + 2 and g(x) = x - 1, what is (fg)(3)?

A. 4
B. 5
C. 10
D. 15

26.3. If f(x) = x + 6 and g(x) = x, what is (f/g)(3)?

A. 1
B. 2
C. 3
D. 4

26.4. If f(x) = x + 4 and g(x) = 2x, what is f(g(1))?

A. 2
B. 4
C. 6
D. 8

26.5. How is f(g(x)) different from f(x) + g(x)?

A. composition uses one output as the next input
B. they always mean the same thing
C. composition always multiplies
D. addition is only for graphs

**27. If f(x) = 3x - 1 and g(x) = x^2, write g(f(x)). Answer as an equation.**

27.1. If f(x) = x + 1 and g(x) = 2x, what is (f + g)(3)?

A. 7
B. 9
C. 10
D. 12

27.2. If f(x) = x + 2 and g(x) = x - 1, what is (fg)(3)?

A. 4
B. 5
C. 10
D. 15

27.3. If f(x) = x + 6 and g(x) = x, what is (f/g)(3)?

A. 1
B. 2
C. 3
D. 4

27.4. If f(x) = x + 4 and g(x) = 2x, what is f(g(1))?

A. 2
B. 4
C. 6
D. 8

27.5. How is f(g(x)) different from f(x) + g(x)?

A. composition uses one output as the next input
B. they always mean the same thing
C. composition always multiplies
D. addition is only for graphs

**28. Find the inverse of f(x) = 2x + 5. Answer as an equation.**

28.1. If f(x) = x + 1 and g(x) = 2x, what is (f + g)(3)?

A. 7
B. 9
C. 10
D. 12

28.2. If f(x) = x + 2 and g(x) = x - 1, what is (fg)(3)?

A. 4
B. 5
C. 10
D. 15

28.3. If f(x) = x + 6 and g(x) = x, what is (f/g)(3)?

A. 1
B. 2
C. 3
D. 4

28.4. If f(x) = x + 4 and g(x) = 2x, what is f(g(1))?

A. 2
B. 4
C. 6
D. 8

28.5. How is f(g(x)) different from f(x) + g(x)?

A. composition uses one output as the next input
B. they always mean the same thing
C. composition always multiplies
D. addition is only for graphs

**29. Find the inverse of g(x) = 4x - 3. Answer as an equation.**

29.1. If f(x) = x + 1 and g(x) = 2x, what is (f + g)(3)?

A. 7
B. 9
C. 10
D. 12

29.2. If f(x) = x + 2 and g(x) = x - 1, what is (fg)(3)?

A. 4
B. 5
C. 10
D. 15

29.3. If f(x) = x + 6 and g(x) = x, what is (f/g)(3)?

A. 1
B. 2
C. 3
D. 4

29.4. If f(x) = x + 4 and g(x) = 2x, what is f(g(1))?

A. 2
B. 4
C. 6
D. 8

29.5. How is f(g(x)) different from f(x) + g(x)?

A. composition uses one output as the next input
B. they always mean the same thing
C. composition always multiplies
D. addition is only for graphs

**30. Write a function that shifts y = x^2 right 3 units. Answer as an equation.**

30.1. If f(x) = x + 1 and g(x) = 2x, what is (f + g)(3)?

A. 7
B. 9
C. 10
D. 12

30.2. If f(x) = x + 2 and g(x) = x - 1, what is (fg)(3)?

A. 4
B. 5
C. 10
D. 15

30.3. If f(x) = x + 6 and g(x) = x, what is (f/g)(3)?

A. 1
B. 2
C. 3
D. 4

30.4. If f(x) = x + 4 and g(x) = 2x, what is f(g(1))?

A. 2
B. 4
C. 6
D. 8

30.5. How is f(g(x)) different from f(x) + g(x)?

A. composition uses one output as the next input
B. they always mean the same thing
C. composition always multiplies
D. addition is only for graphs

**31. Write a function that reflects y = x^2 across the x-axis. Answer as an equation.**

31.1. If f(x) = x + 1 and g(x) = 2x, what is (f + g)(3)?

A. 7
B. 9
C. 10
D. 12

31.2. If f(x) = x + 2 and g(x) = x - 1, what is (fg)(3)?

A. 4
B. 5
C. 10
D. 15

31.3. If f(x) = x + 6 and g(x) = x, what is (f/g)(3)?

A. 1
B. 2
C. 3
D. 4

31.4. If f(x) = x + 4 and g(x) = 2x, what is f(g(1))?

A. 2
B. 4
C. 6
D. 8

31.5. How is f(g(x)) different from f(x) + g(x)?

A. composition uses one output as the next input
B. they always mean the same thing
C. composition always multiplies
D. addition is only for graphs

**32. Which student correctly writes f(g(x)) when f(x) = x + 4 and g(x) = 2x - 1?**

A. Student A: f(g(x)) = (2x - 1) + 4.
B. Student B: f(g(x)) = x + 4 + 2x - 1 without substitution.
C. Student C: f(g(x)) = 2(x + 4) - 1.
D. Student D: f(g(x)) = 2x - 1 + 4x.

32.1. If f(x) = x + 1 and g(x) = 2x, what is (f + g)(3)?

A. 7
B. 9
C. 10
D. 12

32.2. If f(x) = x + 2 and g(x) = x - 1, what is (fg)(3)?

A. 4
B. 5
C. 10
D. 15

32.3. If f(x) = x + 6 and g(x) = x, what is (f/g)(3)?

A. 1
B. 2
C. 3
D. 4

32.4. If f(x) = x + 4 and g(x) = 2x, what is f(g(1))?

A. 2
B. 4
C. 6
D. 8

32.5. How is f(g(x)) different from f(x) + g(x)?

A. composition uses one output as the next input
B. they always mean the same thing
C. composition always multiplies
D. addition is only for graphs