

Precalculus - Transformations of Graphs - Test Answer Key

Common Core F-BF.B.3, F-IF.C.7b · maths-pdf.fr/en/

Worked solutions and scoring notes for the 9-question transformations test. Use the scoring line under each solution to award partial credit.

Precalculus · Common Core State Standards: **F-BF.B.3, F-IF.C.7b**

Question 1 - Describe transformations [2 pts]

Left 2, reflect over the x -axis, up 4.

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Scoring: 1 point for the horizontal shift, 1 point for the reflection and vertical shift.

Question 2 - Move points [2 pts]

(a) $(5, -1)$. (b) x stays 4 and $y = -2(-3) = 6$: $(4, 6)$.

(a) $(5, -1)$; (b) $(4, 6)$

Scoring: 1 point for each point.

Question 3 - Write an equation [2 pts]

Shift: $\sqrt{x+4}$. Reflect: $-\sqrt{x+4}$. Outputs are at most 0.

$y = -\sqrt{x+4}$; range $(-\infty, 0]$

Scoring: 1 point for the equation, 1 point for the range.

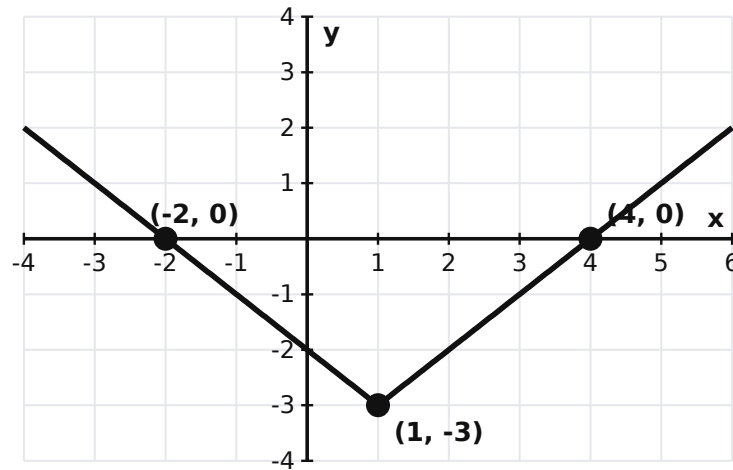
Question 4 - Even and odd [2 pts]

(a) $f(-x) = -x^3 + 5x = -f(x)$: odd. (b) $g(-x) = x^2 + 1 = g(x)$: even.

(a) odd; (b) even

Scoring: 1 point each, with the test shown.

Question 5 - Read an absolute value graph [3 pts]



Intercepts at $x = -2$ and $x = 4$.

(a) Vertex $(1, -3)$: $y = |x - 1| - 3$. (b) The minimum is -3 , so the range is $[-3, \infty)$. (c) $|x - 1| = 3$ gives $x = 4$ or $x = -2$.

$$y = |x - 1| - 3; [-3, \infty); x = -2, 4$$

Scoring: 1 point for each part.

Question 6 - Transform a table [2 pts]

x	0	1	2	3
g(x)	7	1	-1	1

Values of g.

Double each output and subtract 1: $2(4) - 1 = 7$, $2(1) - 1 = 1$, $2(0) - 1 = -1$.

7, 1, -1, 1

Scoring: 1 point for each pair of correct values (2 points total).

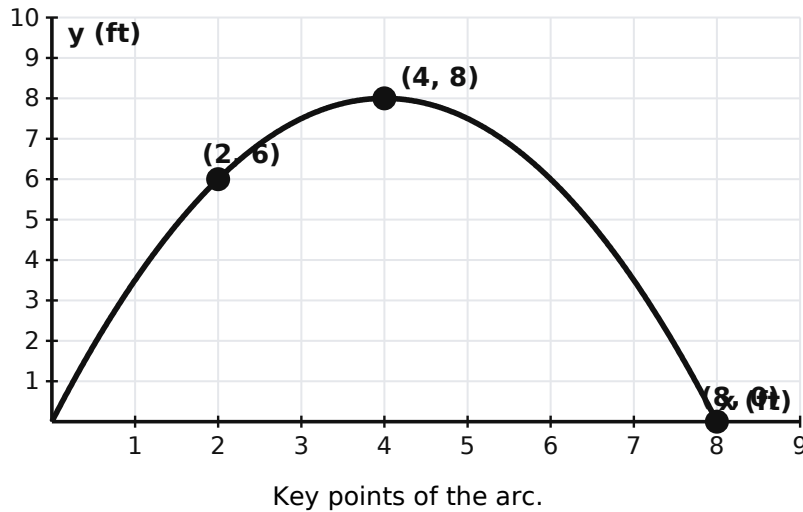
Question 7 - Sequence of transformations [2 pts]

Right 2, vertical stretch 3, up 1. At $x = 11$: $3\sqrt{9} + 1 = 10$.

Value 10

Scoring: 1 point for the description, 1 point for the value.

Question 8 - Fountain [3 pts]



(a) 8 ft. (b) $-0.5(4)+8=6$ ft. (c) $(x-4)^2=16$, so $x=8$.

8 ft; 6 ft; $x=8$ ft

Scoring: 1 point for each part.

Question 9 - Order of transformations [2 pts]

Shift: $(x-3)^2$. Stretch: $2(x-3)^2$. Reflect: $-2(x-3)^2$.

$$y = -2(x-3)^2$$

Scoring: 1 point for the shift and stretch, 1 point for the reflection.

Total

20 points