Watch. Practice. Understand. | Lesson 137

Using GeoGebra Calculator for transforming graphs of 2D and 3D Models

Watch the matching video: https://www.youtube.com/watch?v=hUB_7L3-sjY

Practice focus: Graph transformations

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

01 Describe $y = -2(x - 3)^2 + 1$ relative to $y = x^2$.

02 Find the endpoint and domain of $y = \sqrt{(x + 4)} - 2$.

03 For $y = |x - 2| + 3$, find the minimum and x-intercepts.

04 A point (2, 5) lies on $y = f(x)$. Where does it move on $y = 3f(x - 1) - 4$?

Watch. Practice. Understand. | Lesson 137

Using GeoGebra Calculator for transforming graphs of 2D and 3D Models

Watch the matching video: https://www.youtube.com/watch?v=hUB_7L3-sjY

Practice focus: Three-dimensional coordinates

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

05 Find the distance between (1,2,3) and (4,6,3).

06 Find the midpoint of (0,2,4) and (6,-2,8).

07 Write the sphere with center (1,-2,3) and radius 4.

08 For (3,-4,5), find distances to the xy-plane and to the z-axis.

Worked answers | Lesson 137

Using GeoGebra Calculator for transforming graphs of 2D and 3D Models

Watch the matching video: https://www.youtube.com/watch?v=hUB_7L3-sjY

Practice focus: Graph transformations

Original extra practice matched to the listed lesson topic.

01 Describe $y = -2(x - 3)^2 + 1$ relative to $y = x^2$.

Shift right 3, stretch vertically by 2, reflect across the x-axis, and shift up 1.

02 Find the endpoint and domain of $y = \sqrt{(x + 4)} - 2$.

Endpoint (-4, -2); require x + 4 >= 0, so domain [-4, infinity).

03 For $y = |x - 2| + 3$, find the minimum and x-intercepts.

Minimum 3 at x = 2. There are no x-intercepts because y >= 3.

04 A point (2, 5) lies on $y = f(x)$. Where does it move on $y = 3f(x - 1) - 4$?

The x-coordinate increases by 1 and y becomes 3(5) - 4. New point: (3, 11).

Worked answers | Lesson 137

Using GeoGebra Calculator for transforming graphs of 2D and 3D Models

Watch the matching video: https://www.youtube.com/watch?v=hUB_7L3-sjY

Practice focus: Three-dimensional coordinates

Original extra practice matched to the listed lesson topic.

05 Find the distance between (1,2,3) and (4,6,3).

$\sqrt{(3^2 + 4^2 + 0^2)} = 5$.

06 Find the midpoint of (0,2,4) and (6,-2,8).

Average coordinates: (3,0,6).

07 Write the sphere with center (1,-2,3) and radius 4.

$(x - 1)^2 + (y + 2)^2 + (z - 3)^2 = 16$.

08 For (3,-4,5), find distances to the xy-plane and to the z-axis.

To xy-plane: $|z| = 5$. To z-axis: $\sqrt{(x^2 + y^2)} = \sqrt{25} = 5$.