

Watch. Practice. Understand. | Lesson 103

Big Idea Algebra II Chapter 1 to 3 Lecture part 1

Watch the matching video: <https://www.youtube.com/watch?v=utZ5zhOz684>

Practice focus: Graph transformations

Related course review; confirm topics with your teacher.

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 $y = 3f(x - 1) - 4$?

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Practice focus: Quadratic equations and graphs

Related course review; confirm topics with your teacher.

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

05 Solve $x^2 - 7x + 12 = 0$.

06 Solve $x^2 + 4x - 1 = 0$ exactly.

07 Find the vertex, axis and minimum of $y = 2(x - 3)^2 - 8$.

08 A rectangle has area 60 m^2 and length 4 m more than width. Find its dimensions.

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Big Idea Algebra II Chapter 1 to 3 Lecture part 1

Watch the matching video: <https://www.youtube.com/watch?v=utZ5zhOz684>

Practice focus: Complex numbers

Related course review; confirm topics with your teacher.

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

09 Simplify $(3 + 2i) + (5 - 7i)$.

10 Multiply $(2 + 3i)(4 - i)$.

11 Simplify $(3 + i)/(1 - i)$.

12 Evaluate i^{37} and solve $x^2 + 16 = 0$.

Worked answers | Lesson 103

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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 $x + 4 \geq 0$, so domain $[-4, \text{infinity})$.

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

Minimum 3 at $x = 2$. There are no x-intercepts because $y \geq 3$.

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: $(3, 11)$.

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05 Solve $x^2 - 7x + 12 = 0$.

Factor: $(x - 3)(x - 4) = 0$. Roots: 3 and 4.

06 Solve $x^2 + 4x - 1 = 0$ exactly.

Complete the square: $(x + 2)^2 = 5$. Thus $x = -2 \pm \sqrt{5}$.

07 Find the vertex, axis and minimum of $y = 2(x - 3)^2 - 8$.

Vertex (3, -8); axis $x = 3$. Since $2 > 0$, minimum is -8.

08 A rectangle has area 60 m^2 and length 4 m more than width. Find its dimensions.

$w(w + 4) = 60$, so $(w + 10)(w - 6) = 0$. Reject -10: width 6 m, length 10 m.

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09 Simplify $(3 + 2i) + (5 - 7i)$.

Combine real and imaginary parts: $8 - 5i$.

10 Multiply $(2 + 3i)(4 - i)$.

$$8 - 2i + 12i - 3i^2 = 11 + 10i.$$

11 Simplify $(3 + i)/(1 - i)$.

Multiply top and bottom by $1 + i$: $(2 + 4i)/2 = 1 + 2i$.

12 Evaluate i^{37} and solve $x^2 + 16 = 0$.

37 leaves remainder 1 on division by 4, so $i^{37} = i$. The equation gives $x = \pm 4i$.