

The Secret of Studying Algebra II and Trigonometry Final Study Packet Part III

Lesson 162 | Trigonometry | Rational expressions and graphs • Trigonometric equations • Sine and cosine graphs

<https://www.youtube.com/watch?v=XFz9Qaew4eU>

Related review: exact coverage needs teacher confirmation.

Name: _____ Date: _____ Show your reasoning.

01

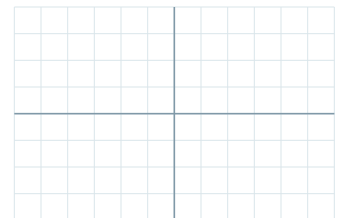
Simplify $(x^2 - 8x - 20)/(x - 10)$ and identify the excluded input and hole.

02

Solve $9\sin(4x) - 9/2 = 0$ for $0 \leq x < 2\pi$. Give an exact formula listing all roots.

03

Analyze and sketch one cycle of $y = 11\sin(3(x-9)) + 7$. Give amplitude, period, phase shift, midline, and five key points.



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04

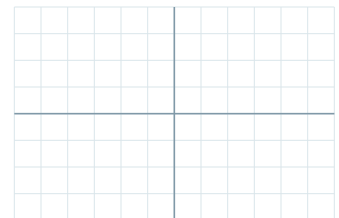
Simplify $(x^2 - x - 72)/(x - 9)$ and identify the excluded input and hole.

05

Solve $10\sin(7x) - 5 = 0$ for $0 \leq x < 2\pi$. Give an exact formula listing all roots.

06

Analyze and sketch one cycle of $y = 8\sin(6(x - (-1))) + 10$. Give amplitude, period, phase shift, midline, and five key points.



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01

Simplify $(x^2 - 8x - 20)/(x - 10)$ and identify the excluded input and hole.

Factor the numerator as $(x-10)(x+2)$. Cancel for $x \neq 10$; simplified rule $x+2$. The original domain excludes 10; the hole is (10, 12).

02

Solve $9\sin(4x) - 9/2 = 0$ for $0 \leq x < 2\pi$. Give an exact formula listing all roots.

$\sin(4x) = 1/2$. Thus $x = (\pi/6 + 2k\pi)/4$ or $x = (5\pi/6 + 2k\pi)/4$, $k=0,1,\dots,3$. There are 8 roots in the interval.

03

Analyze and sketch one cycle of $y = 11\sin(3(x-9)) + 7$. Give amplitude, period, phase shift, midline, and five key points.

Amplitude 11; period $2\pi/3$; shift 9; midline $y=7$. Start at $x=9$; use x -increments $\pi/6$. The five y -values are 7, 18, 7, -4, 7.

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04

Simplify $(x^2 - x - 72)/(x - 9)$ and identify the excluded input and hole.

Factor the numerator as $(x-9)(x+8)$. Cancel for $x \neq 9$; simplified rule $x+8$. The original domain excludes 9; the hole is (9, 17).

05

Solve $10\sin(7x)-5=0$ for $0 \leq x < 2\pi$. Give an exact formula listing all roots.

$\sin(7x)=1/2$. Thus $x=(\pi/6+2k\pi)/7$ or $x=(5\pi/6+2k\pi)/7$, $k=0,1,\dots,6$. There are 14 roots in the interval.

06

Analyze and sketch one cycle of $y=8\sin(6(x-(-1)))+10$. Give amplitude, period, phase shift, midline, and five key points.

Amplitude 8; period $2\pi/6$; shift -1; midline $y=10$. Start at $x=-1$; use x -increments $\pi/12$. The five y -values are 10,18,10,2,10.