

## The Reliable Algebra II and Trigonometry Final Packet Review Part 1

Lesson 160 | Trigonometry | Rational expressions and graphs • Trigonometric equations • Sine and cosine graphs

<https://www.youtube.com/watch?v=XMRp6xYXCGE>

Related review: exact coverage needs teacher confirmation.

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Show your reasoning.

**01**

Simplify  $(x^2 - x - 30)/(x - 6)$  and identify the excluded input and hole.

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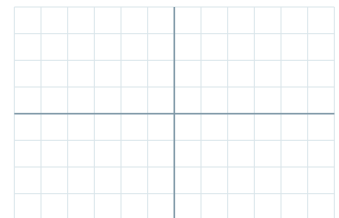
**02**

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

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**03**

Analyze and sketch one cycle of  $y = 12\sin(4(x - (-2))) + 4$ . Give amplitude, period, phase shift, midline, and five key points.



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**04**

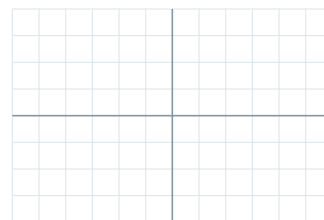
Simplify  $(x^2 - x - 12)/(x - 4)$  and identify the excluded input and hole.

**05**

Solve  $11\sin(6x) - 11/2 = 0$  for  $0 \leq x < 2\pi$ . Give an exact formula listing all roots.

**06**

Analyze and sketch one cycle of  $y = 10\sin(4(x - (-9))) + 3$ . Give amplitude, period, phase shift, midline, and five key points.



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**01**

Simplify  $(x^2 - x - 30)/(x - 6)$  and identify the excluded input and hole.

Factor the numerator as  $(x-6)(x+5)$ . Cancel for  $x \neq 6$ ; simplified rule  $x+5$ . The original domain excludes 6; the hole is (6, 11).

**02**

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

$\sin(5x) = 1/2$ . Thus  $x = (\pi/6 + 2k\pi)/5$  or  $x = (5\pi/6 + 2k\pi)/5$ ,  $k=0,1,\dots,4$ . There are 10 roots in the interval.

**03**

Analyze and sketch one cycle of  $y = 12\sin(4(x - (-2))) + 4$ . Give amplitude, period, phase shift, midline, and five key points.

Amplitude 12; period  $2\pi/4$ ; shift -2; midline  $y=4$ . Start at  $x=-2$ ; use  $x$ -increments  $\pi/8$ . The five  $y$ -values are 4, 16, 4, -8, 4.

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**04**

Simplify  $(x^2 - x - 12)/(x - 4)$  and identify the excluded input and hole.

Factor the numerator as  $(x-4)(x+3)$ . Cancel for  $x \neq 4$ ; simplified rule  $x+3$ . The original domain excludes 4; the hole is (4, 7).

**05**

Solve  $11\sin(6x) - 11/2 = 0$  for  $0 \leq x < 2\pi$ . Give an exact formula listing all roots.

$\sin(6x) = 1/2$ . Thus  $x = (\pi/6 + 2k\pi)/6$  or  $x = (5\pi/6 + 2k\pi)/6$ ,  $k=0,1,\dots,5$ . There are 12 roots in the interval.

**06**

Analyze and sketch one cycle of  $y = 10\sin(4(x - (-9))) + 3$ . Give amplitude, period, phase shift, midline, and five key points.

Amplitude 10; period  $2\pi/4$ ; shift -9; midline  $y=3$ . Start at  $x=-9$ ; use  $x$ -increments  $\pi/8$ . The five  $y$ -values are 3, 13, 3, -7, 3.