

Watch. Practice. Understand. | Lesson 158

Trigonometry 4 1 to 4 4 Study Packet Review and Critical Problems Analysis

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

Practice focus: Sine and cosine graphs

Related course review; confirm topics with your teacher.

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

01 Find amplitude, period and midline of $y = 3\sin(2x) - 1$.

02 For $y = 2\cos(x - \pi/3)$, identify the horizontal shift and range.

03 List five key points of one cycle of $y = \sin x$ on $[0, 2\pi]$.

04 A wheel's rider height is $h(t) = 12 - 10\cos(\pi t/15)$ meters. Find minimum, maximum and period.

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

Practice focus: Tangent, cotangent, secant and cosecant graphs

Related course review; confirm topics with your teacher.

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

05 Find the period and vertical asymptotes of $y = \tan(2x)$.

06 Find the period and asymptotes of $y = \cot x$.

07 Find the range and vertical asymptotes of $y = \sec x$.

08 Find the range and vertical asymptotes of $y = 2\csc x + 1$.

Worked answers | Lesson 158

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01 Find amplitude, period and midline of $y = 3\sin(2x) - 1$.

Amplitude 3; period $2\pi/2 = \pi$; midline $y = -1$.

02 For $y = 2\cos(x - \pi/3)$, identify the horizontal shift and range.

Shift right $\pi/3$; range $[-2, 2]$.

03 List five key points of one cycle of $y = \sin x$ on $[0, 2\pi]$.

$(0,0)$, $(\pi/2,1)$, $(\pi,0)$, $(3\pi/2,-1)$, $(2\pi,0)$. Join smoothly.

04 A wheel's rider height is $h(t) = 12 - 10\cos(\pi t/15)$ meters. Find minimum, maximum and period.

Minimum 2 m; maximum 22 m; period $2\pi/(\pi/15) = 30$ seconds if t is in seconds.

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05 Find the period and vertical asymptotes of $y = \tan(2x)$.

Period $\pi/2$. $\cos(2x) = 0$ gives $x = \pi/4 + k\pi/2$ for any integer k .

06 Find the period and asymptotes of $y = \cot x$.

Period π ; $\sin x = 0$ gives $x = k\pi$ for any integer k .

07 Find the range and vertical asymptotes of $y = \sec x$.

Range $(-\infty, -1]$ union $[1, \infty)$. Asymptotes $x = \pi/2 + k\pi$ for integer k .

08 Find the range and vertical asymptotes of $y = 2\csc x + 1$.

Range $(-\infty, -1]$ union $[3, \infty)$. Asymptotes $x = k\pi$ for integer k .