

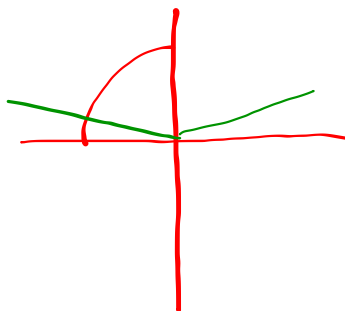
Warm-up 2/1/17

Solve for x in the given interval.

$$\csc x = 2, \pi/2 \leq x \leq \pi$$

$$\sin x = \frac{1}{2}$$

$$\frac{5\pi}{6}$$



4.6: Graphs of Composite Trigonometric Functions

Which functions appear to be periodic?

(a) $y = \sin x + x^2$

(b) $y = x^2 \sin x$

(c) $y = (\sin x)^2$

(d) $y = \sin(x^2)$

Graphing Calculator



Verify algebraically that $f(x) = (\sin x)^2$ is periodic and determine its period graphically.

$$f(x+2\pi) = (\sin(x+2\pi))^2 = (\sin x)^2 = f(x)$$

$$\text{Period} = \pi$$

Verify algebraically that $f(x) = \sin^3 x$ is periodic and determine its period graphically.

$$f(x+2\pi) = \sin^3(x+2\pi) = (\sin(x+2\pi))^3$$

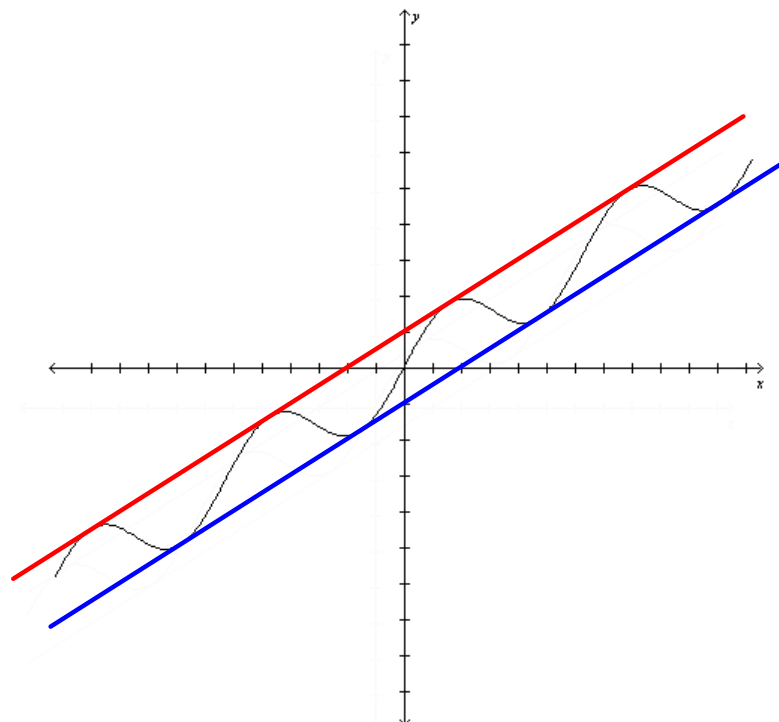
$$\text{Period} = 2\pi = (\sin x)^3 = \sin^3 x = f(x)$$

Graphing Calculator

The graph of $f(x) = 0.5x + \sin x$ oscillates between two parallel lines. What are the equations of the two lines?

$$y = \frac{1}{2}x + 1$$

$$y = \frac{1}{2}x - 1$$



Sums that are Sinusoid Functions

If $y_1 = a_1 \sin(b(x - h_1))$ and $y_2 = a_2 \cos(b(x - h_2))$, then

$$y_1 + y_2 = a_1 \sin(b(x - h_1)) + a_2 \cos(b(x - h_2))$$

different
same

is a sinusoid with period $2\pi/|b|$.

Determine whether each of the following functions is or is not a sinusoid.

(a) $f(x) = 5 \cos x + 3 \sin x$ yes 2π

same

(b) $f(x) = \cos 5x + \sin 3x$ no

(c) $f(x) = 2 \cos 3x - 3 \cos 2x$ no

$$\frac{2\pi}{3/7}$$

(d) $f(x) = a \cos(3x/7) - b \cos(3x/7) + c \cos(3x/7)$ yes $\frac{14\pi}{3}$

Assignment: pp. 375 - 377

1 - 12, 19 - 28, 83, 86

Attachments



Graphing Calculator