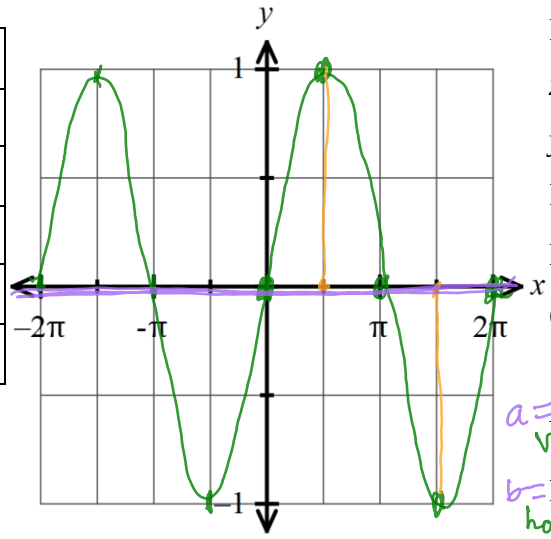
Parent Functions #10

Name of Graph: Sine

Equation: $f(x)=\sin x$

x	$f(x)$
0	0
$\frac{\pi}{2}$	1
π	0
$\frac{3\pi}{2}$	-1
2π	0



Key Features

Domain: $(-\infty,\infty)$

Range: $[-1,1]$

x-intercept(s): $x=\pi k$

y-intercept: $(0,0)$

Increasing: Periodically

Decreasing: Periodically

Constant: N/A

Positive: periodically

Negative: periodically

Maximums /Minimums: absolute 1 −1

Symmetry: odd

End Behavior:

$\lim_{x\to-\infty} f(x) = N/A$

$\lim_{x\to\infty} f(x) = N/A$

a = Amplitude: 1 (vert stretch)

b = Period: 2π (hor. stretch)

c = Phase Shift: 0

d = Vertical Shift: 0

d = Midline: $y=0$

Cycle: Period

Transformation Equation: $y=a\sin(b(x-c))+d$

Period formula: $P=\frac{2\pi}{b}$

amplitude formula: $\frac{max-min}{2}$

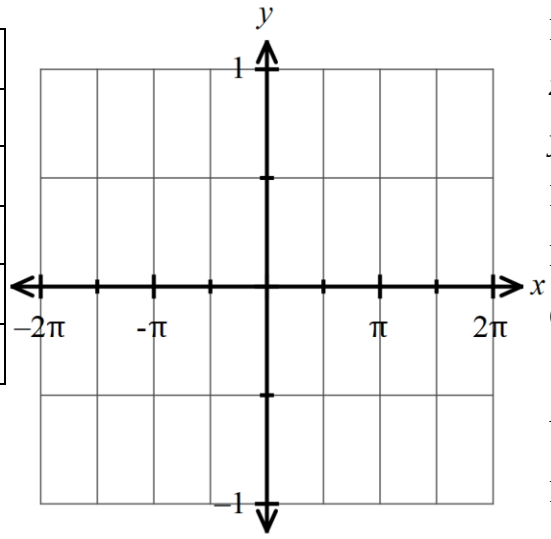
Vertical Shift formula: $\frac{max+min}{2}$

Parent Functions #10

Name of Graph: _____

Equation: _____

x	$f(x)$



Key Features

Domain:

Range:

x-intercept(s):

y-intercept:

Increasing:

Decreasing:

Constant:

Positive:

Negative:

Maximums /Minimums

Symmetry:

End Behavior:

$\lim_{x\to-\infty} f(x) =$

$\lim_{x\to\infty} f(x) =$

Amplitude:

Period:

Phase Shift:

Vertical Shift:

Midline:

Cycle:

Transformation Equation:

Period formula:

amplitude formula:

Vertical Shift formula:

Steps for solving sine equation:

1. Get sine by itself
    a. do inverse operations
    b. factor—"U" substitution
    c. use identity to change
2. Use "All Students Take Calculus" to draw triangles in correct quadrants
3. Label the sides of the triangles—opposite over hypotenuse
4. Find the reference angle
5. Find the angles in standard position
    Stop here if you are given an interval in the directions
6. If directions say to find ALL angles, write the equations
    $\theta = angle + 2\pi k$ or $\theta = angle + 360°k$

EX. $2\sin^2 x - 7\sin x - 4 = 0$

EX. $2\sqrt{3} - 6\sin x = 5\sqrt{3}$

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