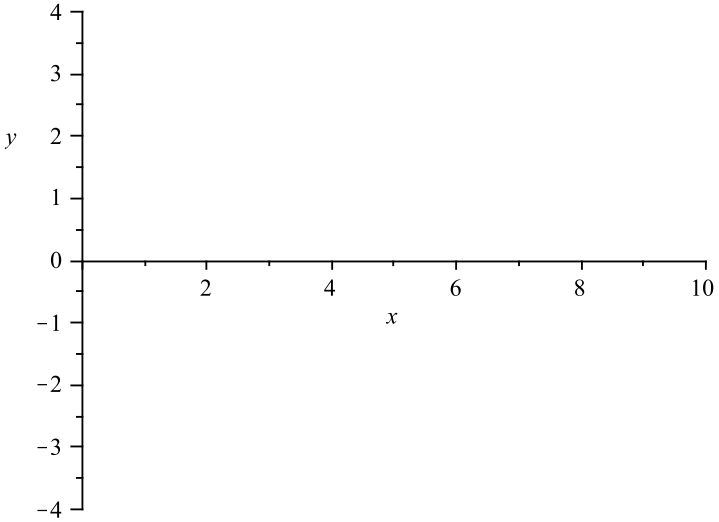
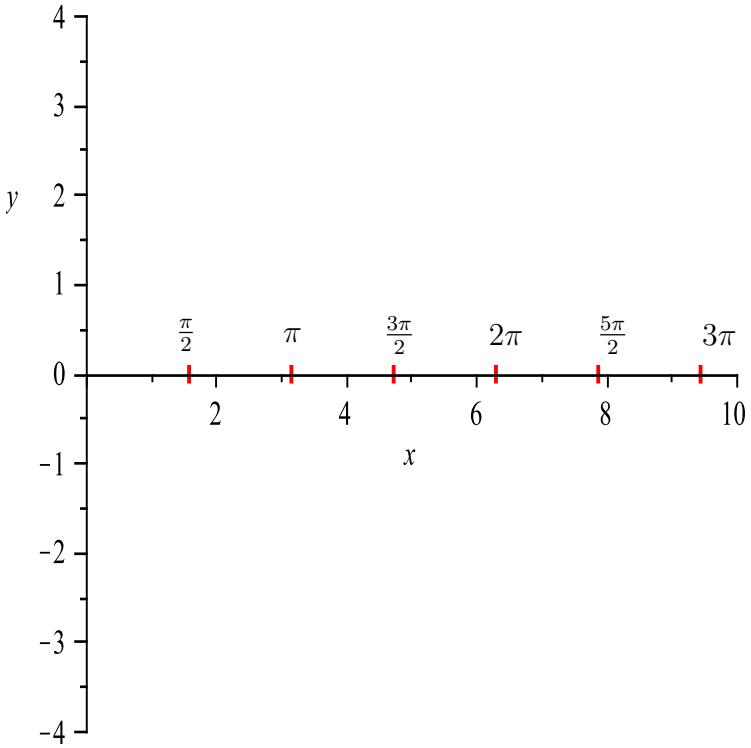
MATH 1060 Quiz 6 Fall 2008

Solutions

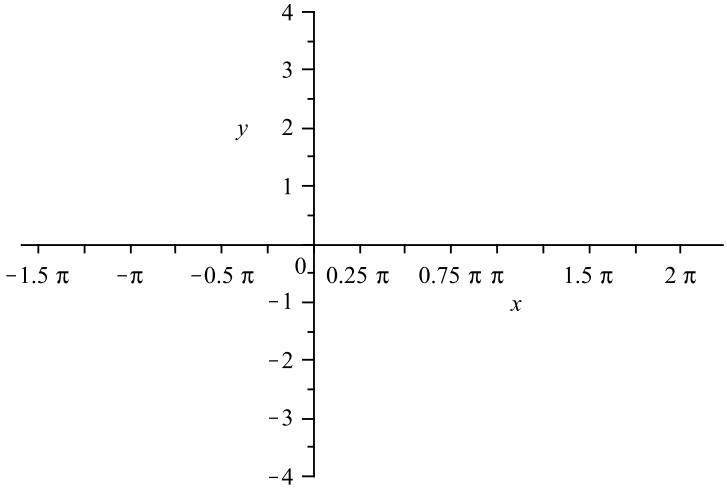
1. Below is a set of axes. The tickmarks on the x-axis are labeled with integers. On the same set of axes add tickmarks to the x-axis labeled with multiples of $\frac{\pi}{2}$.



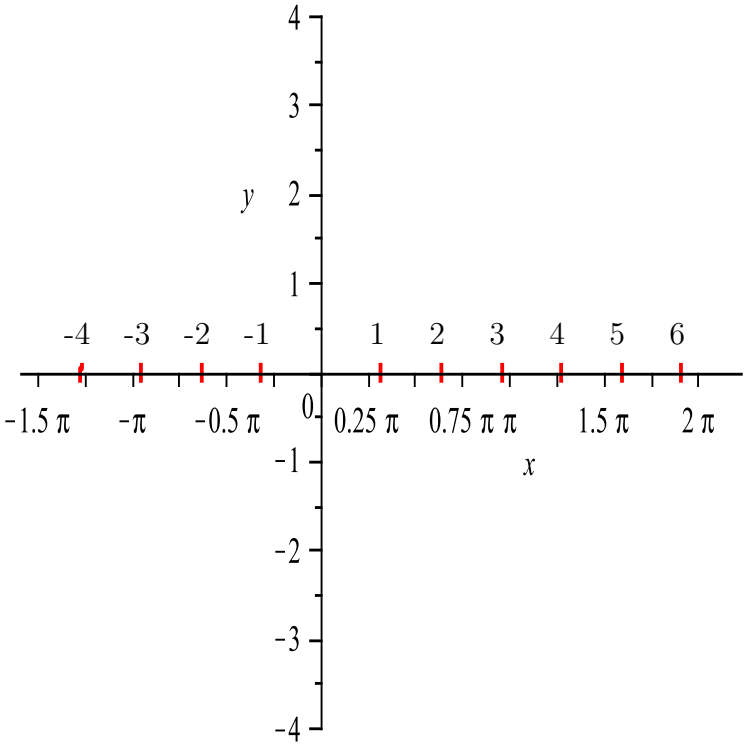
Solution:



2. Below is a set of axes. The tickmarks on the x-axis are labeled with multiples of $\frac{\pi}{4}$. On the same set of axes add tickmarks to the x-axis labeled with integers.



Solution:



3. For $2\sin(3x - \pi) + 1$ give the

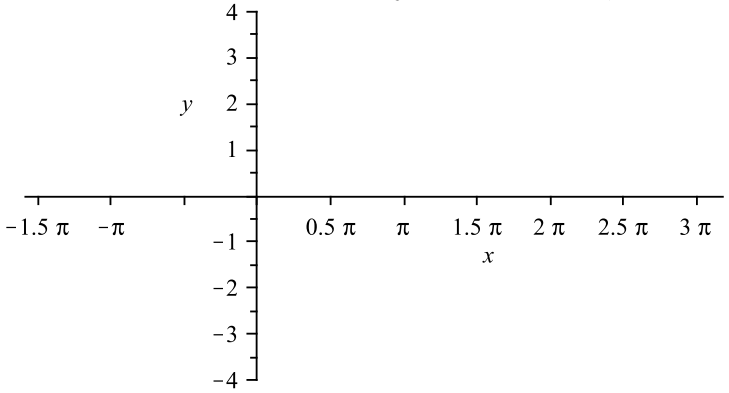
- amplitude
- period
- phase shift

- vertical shift

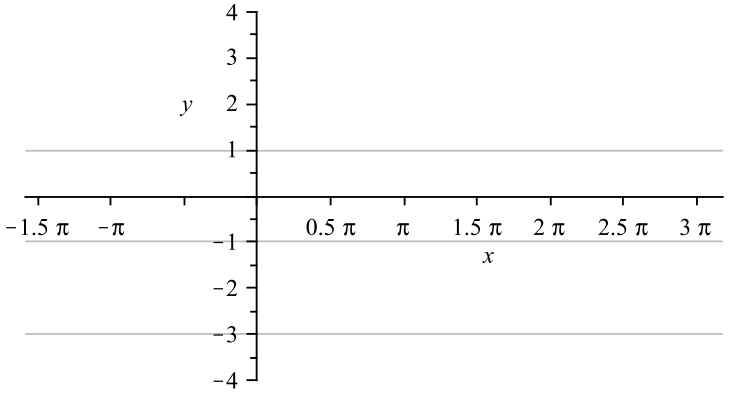
Solution:

- amplitude=2
- period=$\frac{2\pi}{3}$
- phase shift=$\frac{\pi}{3}$
- vertical shift=1

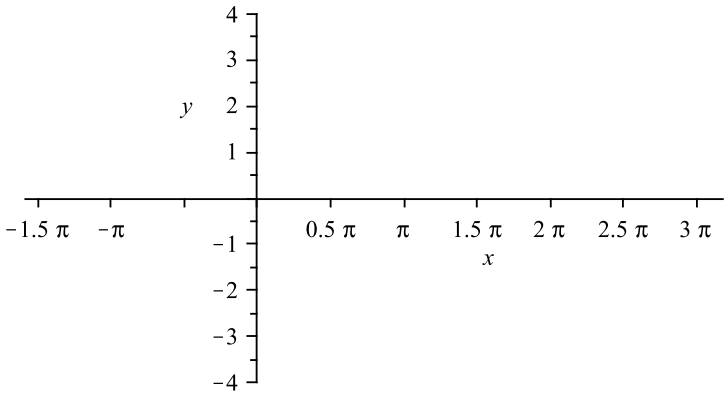
4. Consider a sine curve with amplitude=2, period=π, phase shift=1, and vertical shift=-1. On the axes below draw **only** the minimum, maximum and equilibrium lines.



Solution:
Maximum line is at height=vertical shift + amplitude = $-1+2=1$. Minimum line is at height=vertical shift - amplitude = $-1-2=-3$. Equilibrium line is at height=vertical shift = -1.

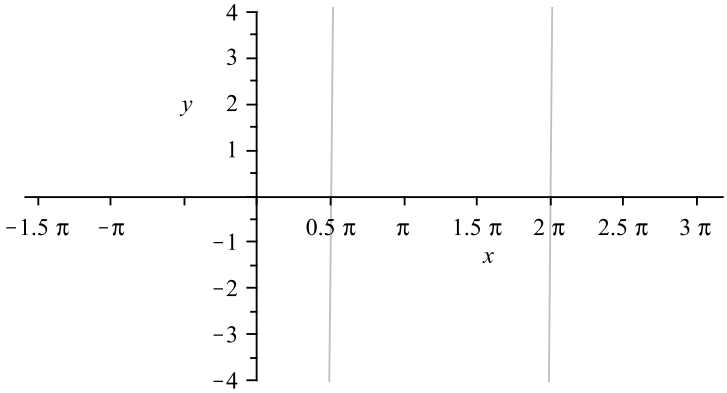


5. Consider a sine curve with amplitude=1, period=$\frac{3\pi}{2}$, phase shift=$\frac{\pi}{2}$, and vertical shift=-1. On the axes below draw **only** a vertical starting line and ending line.



Solution:

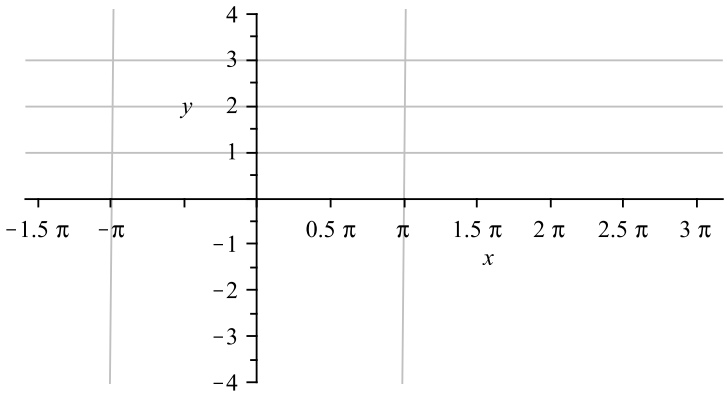
Staring line has x-coordinate = phase shift = $\frac{\pi}{2}$. Ending line has x-coordinate = phase shift + period = $\frac{\pi}{2} + \frac{3\pi}{2} = 2\pi$.



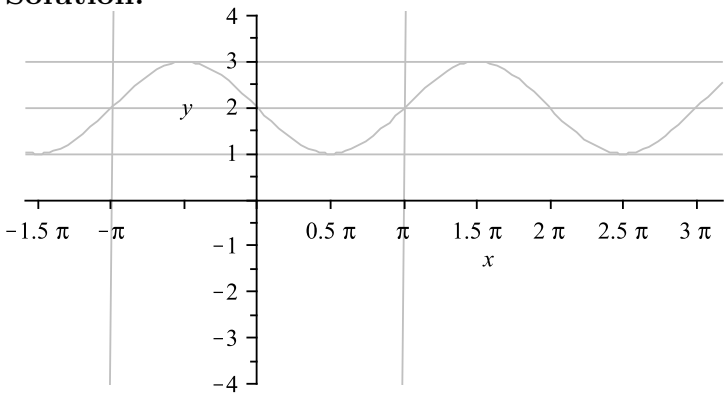
6. On the axes below you are given the maximum, minimum, equilibrium, starting and ending lines. Draw in a sine curve (the entire curve, not just one cycle). What are the

- amplitude
- period
- phase shift
- vertical shift

for the curve?



Solution:



- amplitude = 1 = distance between maximum and equilibrium lines.
- period = 2π = distance between starting and ending lines.
- phase shift = $-\pi$ = x-coordinate of starting line.
- vertical shift = 2 = y-coordinate of equilibrium line.