Graphs of Trigonometric Functions (Sheet 2)

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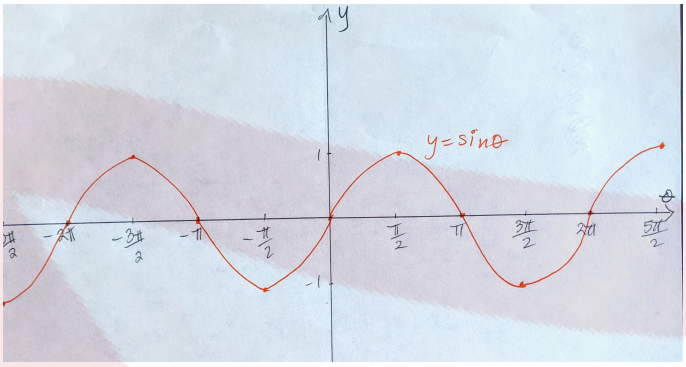
Graphs of trigonometric functions

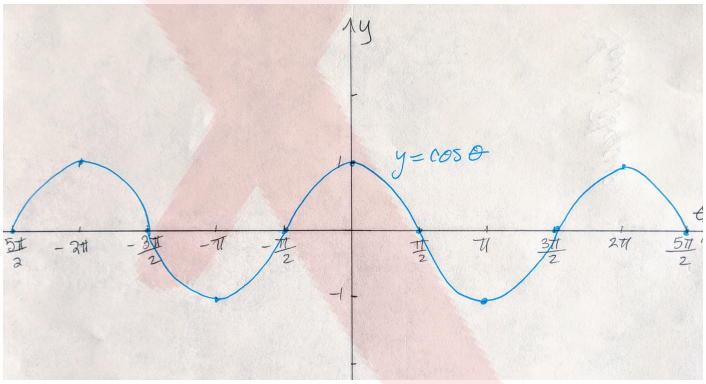
Graph of $\sin\theta$

θ	0	$\pi/2$	π	$3\pi/2$	2π
$\sin\theta$	0	1	0	-1	0



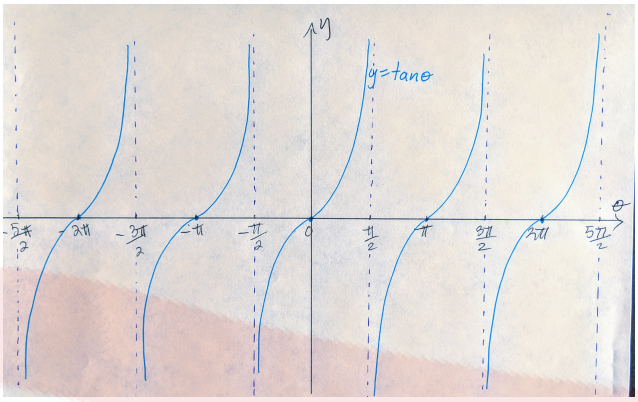
Graph of $\cos\theta$

θ	0	$\pi/2$	π	$3\pi/2$	2π
$\cos\theta$	1	0	-1	0	1



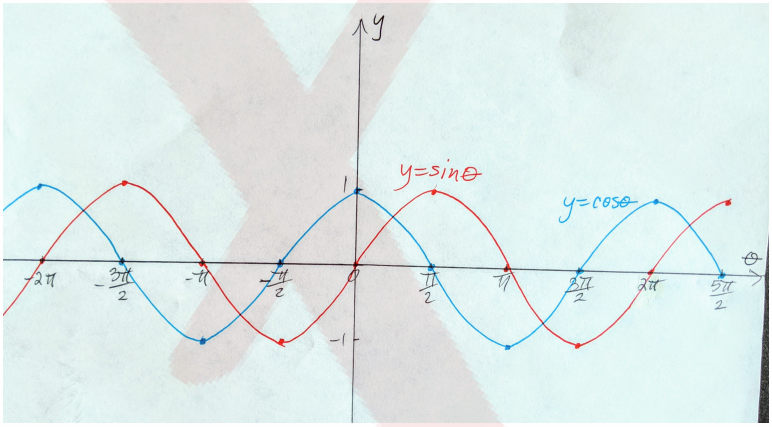
Graph of $\tan\theta$

θ	0	$\pi/4$	$\pi/2$	$3\pi/4$	π	$5\pi/4$	$3\pi/2$	$7\pi/4$	2π
$\tan\theta$	0	1	∞	-1	0	1	∞	-1	0



Notice that the function $y = \sin\theta$ and $y = \cos\theta$ are periodic functions that repeat a patten over the interval $0 \leq \theta \leq 2\pi$. The length of this interval is called the *period* of the function and is 2π in this case. Notice that $y = \tan\theta$ has vertical asymptotes at odd multiples of π, that is when,

$$\theta = \pi/2, \text{ or } \theta = (2n-1)\pi/2, n = \ldots, -1, 0, 1, \ldots$$



Exercises

1. State the amplitude, phase shift, vertical translation and period of the following trigonometric functions.

   a) $2\sin(5\theta - 5\pi/2) + 1$

   b) $-3\cos(2\theta + 4\pi) - 2$

   c) $-\sin(3\theta - 3\pi/4) + 3$

   d) $1/2\cos(-\theta + \pi) - 4$

   e) $-1/3\sin(\theta/2 - 3\pi/4) + 2$

2. Graph each function in # 1.