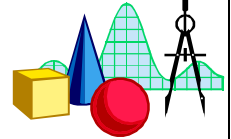


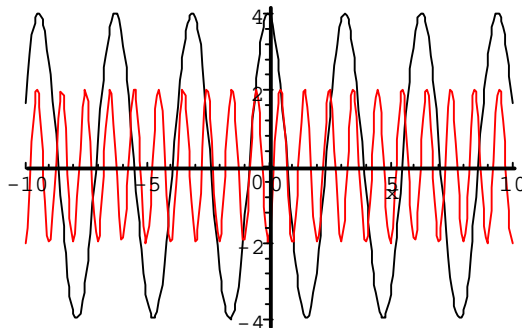


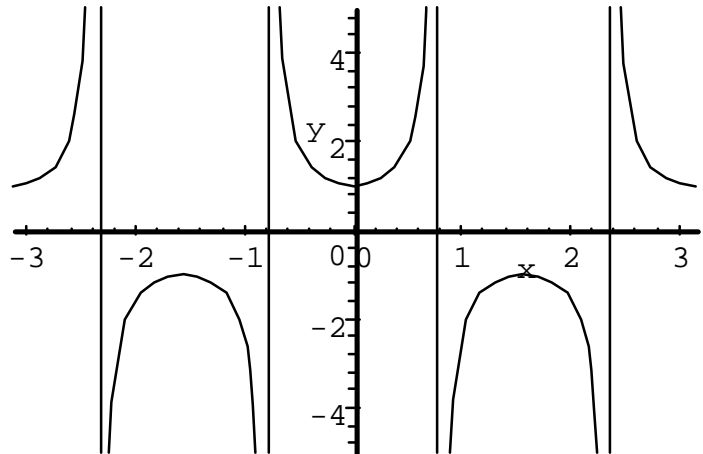
MATH DEPT. SOLUTION TO TUTORIAL 8



Solution 8: Trigonometry II: unit circle, graphs, inverse of sine, cosine and tangent, radian measure.

1. (a) (i) $3\delta/4$
(ii) $5\delta/4$
(iii) $-5\delta/6$
(iv) $13\delta/6$
- (b) (i) 315°
(ii) 300°
(iii) -81°
(iv) 495°
2. (a) (i) $\cos \phi = 5/13$
 $\sin \phi = -12/13$
 $\tan \phi = -12/5$
 $\cot \phi = -5/12$
 $\sec \phi = 13/5$
 $\csc \phi = -13/12$
- (ii) $\cos \phi = -1/\sqrt{5}$
 $\sin \phi = -2\sqrt{5}$
 $\tan \phi = 2$
 $\cot \phi = 1/2$
 $\sec \phi = -\sqrt{5}$
 $\csc \phi = -\sqrt{5}/2$
- (iii) $\cos \phi = -3/5$
 $\sin \phi = 2\sqrt{13}$
 $\tan \phi = -2/3$
 $\cot \phi = -3/2$
 $\sec \phi = -\sqrt{13}/3$
 $\csc \phi = \sqrt{13}/2$
- (b) (i) $30^\circ (\delta/6)$
(ii) $\delta/6$
- (iii) $\delta/3$
(iv) $45^\circ (\delta/4)$
- (c) (i) $\sin 405^\circ = \sin 45^\circ = \frac{1}{\sqrt{2}}$
(ii) $\cot 17\delta/4 = \cot \delta/4 = 1$
- (iii) $\sec 19\delta/6 = \sec 7\delta/6 = -\sec \delta/6 = -2/\sqrt{3}$
(iv) $\tan 225^\circ = \tan 45^\circ = 1$
- (d) (i) $\cos \phi = -4/5$
 $\sin \phi = -3/5$
 $\tan \phi = 3/4$
 $\cot \phi = 4/3$
 $\sec \phi = -5/4$
 $\csc \phi = -5/3$
- (ii) $\cos \phi = -12/13$
 $\sin \phi = 5/13$
 $\tan \phi = -5/12$
 $\cot \phi = -12/5$
 $\sec \phi = -13/12$
 $\csc \phi = 13/5$
- (iii) $\cos \phi = -4\sqrt{17}$
 $\sin \phi = -1\sqrt{17}$
 $\tan \phi = 1/4$
 $\cot \phi = 4$
 $\sec \phi = -\sqrt{17}/4$
 $\csc \phi = -\sqrt{17}$
- (iv) $\cos \phi = 1/2$
 $\sin \phi = -\sqrt{3}/2$
 $\tan \phi = -\sqrt{3}$
 $\cot \phi = -1/\sqrt{3}$
 $\sec \phi = 2$
 $\csc \phi = -2\sqrt{3}$
3. (i) Amplitude is 2 while the period is 2δ
(ii) Amplitude is 4 while the period is 1
(iii) Amplitude is 3 while the period is 4δ
- 4.





5. (i) $\arcsin -1/2 = -\pi/6$ (ii) $\arccos -\sqrt{2}/2 = 3\pi/4$
 (iii) $\arctan 1 = \pi/4$ (iv) $\arctan -\sqrt{3} = -\pi/3$
 (v) $\sin(\arccos 1/2) = \sqrt{3}/2$ (vi) $\sec(\arcsin(-1/2)) = 2/\sqrt{3}$

6.

