Semester Exam Review Key

1. $129°$

2. $47°, 74°, 43°, 71°$

3. $\sin\theta = \frac{2}{\sqrt{29}}$, $\cos\theta = \frac{-5}{\sqrt{29}}$, $\tan\theta = -\frac{2}{5}$, $\csc\theta = \frac{\sqrt{29}}{2}$,
$\sec\theta = -\frac{\sqrt{29}}{5}$, $\cot\theta = -\frac{5}{2}$

4. $\sin\theta = -\frac{2}{3}$, $\cos\theta = \frac{-\sqrt{5}}{3}$, $\tan\theta = \frac{2}{\sqrt{5}}$, $\csc\theta = -\frac{3}{2}$
$\sec\theta = -\frac{3}{\sqrt{5}}$, $\cot\theta = \frac{\sqrt{5}}{2}$

5. 28.6^o

6. 62.8 m

7. 5.106 m

8. 5491.9 ft, 5473.5 ft

9. a) 3.29 km, b) 6.15 km, c) 79°

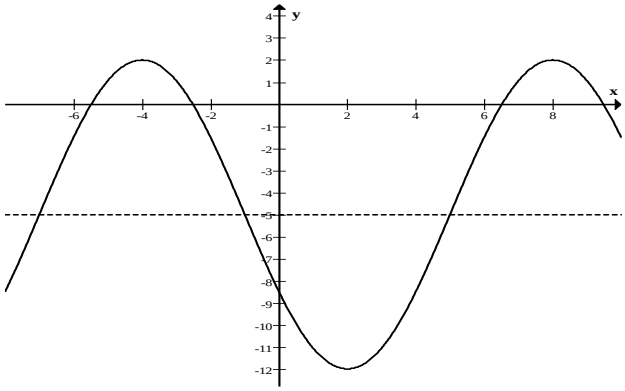
10.

A = Amplitude: Distance from the sinusoidal axis to a high point or low point.

B = Frequency: How many times the graph cycles in 360° or 2π radians.
$\frac{2\pi}{B} = period$
C = Vertical Shift

D = Horizontal shift or *phase displacement*

11.



12. 7

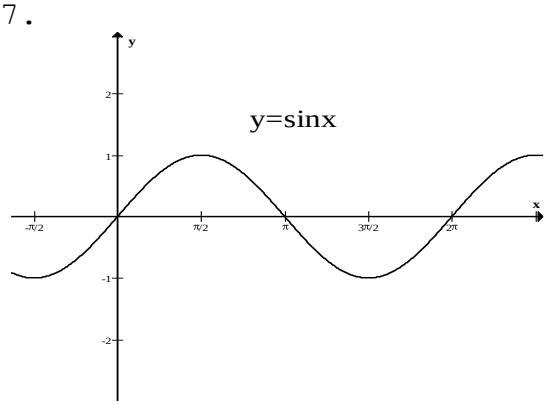
13. $y = -10 + 35\sin\frac{\pi}{20}(x+7)$

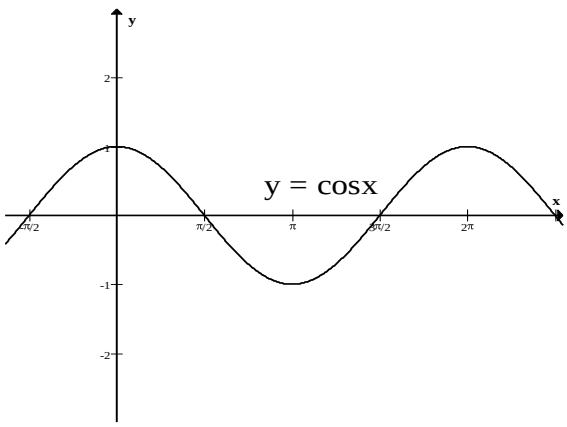
14. $\frac{\pi}{4}$, $\frac{2\pi}{3}$, $\frac{5\pi}{6}$, $\frac{5\pi}{4}$, $-\frac{\pi}{2}$

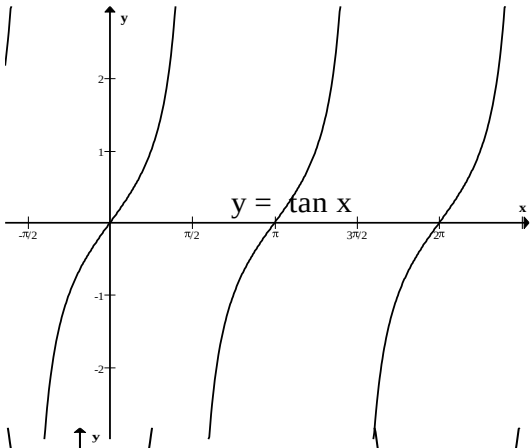
15. 240° , 30° , 315° , 150° , -72°

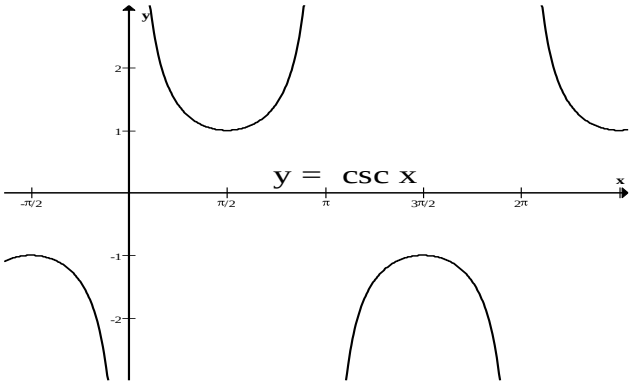
16. $\frac{\sqrt{3}}{2}$, 0, $-\frac{\sqrt{2}}{2}$, $\frac{\sqrt{3}}{2}$

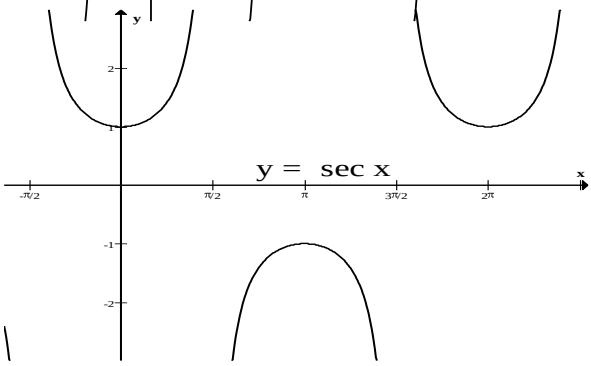
17.

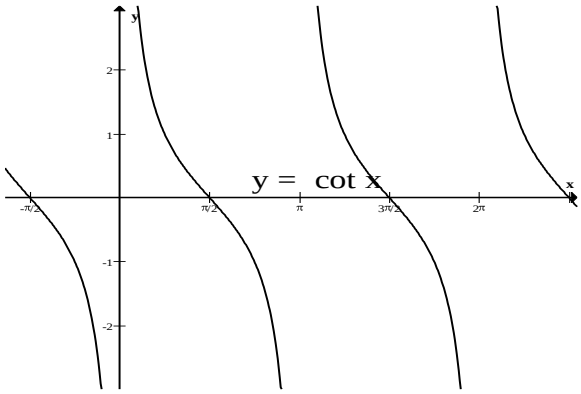












18. 90° , 150° , $\varnothing$

19. $-\frac{\pi}{4}$, $\frac{\pi}{4}$, 0

20. $-\frac{\pi}{3}$, $\frac{\sqrt{7}}{4}$, $\varnothing$

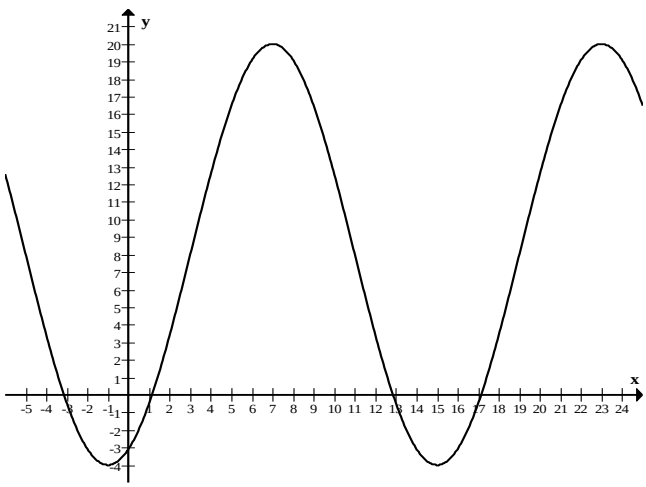
21. a) 4.298

b) 0.83 , 11.17 , 18.83

22. a) 6.04

b) 5.24, 10.76, 29.24

23.



24. $y = 8 + 12\cos\frac{\pi}{8}(x-7)$

25. 3.408 Feet

26. 1.142 Seconds

27. Coming out of the water.

28. 60cm

29.

$(1+\cos x)(1-\cos x) = \sin^2 x$

$1-\cos^2 x$

$\sin^2 x \;=\; \sin^2 x$

30.
cotx + tanx = cscx secx

$$\frac{\cos x}{\sin x}+\frac{\sin x}{\cos x}$$

$$\frac{\cos^2 x}{\sin x\cos x}+\frac{\sin^2 x}{\sin x\cos x}$$

$$\frac{1}{\sin x\cos x}$$

$$\csc x\sec x=\csc x\sec x$$

31.
$$\csc\theta\cos^2\theta+\sin\theta=\csc\theta$$

$$\frac{1}{\sin\theta}\cos^2\theta+\sin\theta$$

$$\frac{\cos^2\theta}{\sin\theta}+\frac{\sin^2\theta}{\sin\theta}$$

$$\frac{1}{\sin\theta}=\csc\theta$$

32. $\theta=-136^o$ or 224°

33. $\frac{\pi}{3},\frac{2\pi}{3},\frac{4\pi}{3},\frac{5\pi}{3}$

34. $0°,180°,210°,330°$

35. No solution

36. $\frac{3\pi}{4}$ *and* $\frac{7\pi}{4}$

37. $\frac{\pi}{3},\frac{5\pi}{3}$, *and* π