

Find the measure of an angle between 0° and 360° coterminal with each given angle.

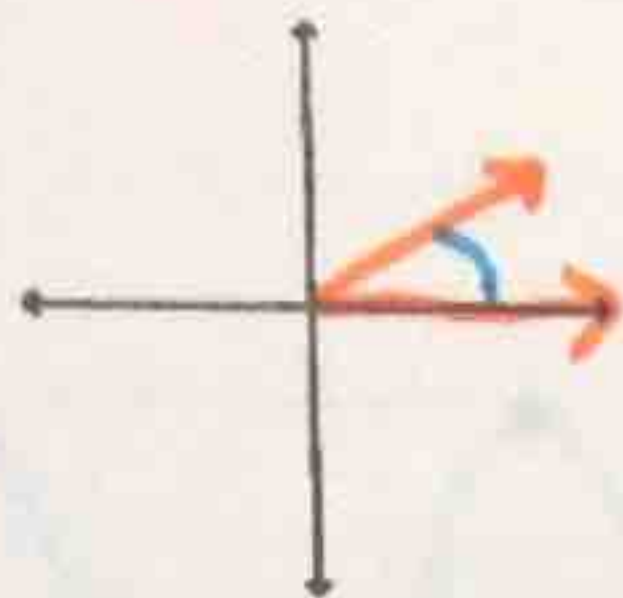
1. -323° 37°

2. -4° 356°

3. 370° 10°

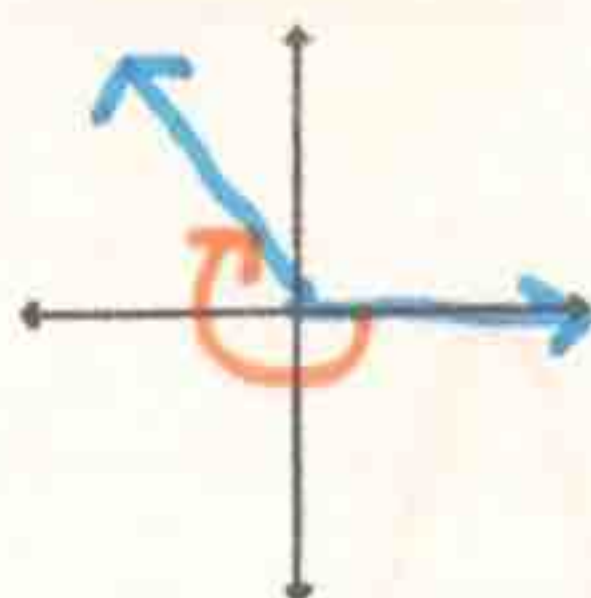
Sketch each angle in standard position.

4. 15°



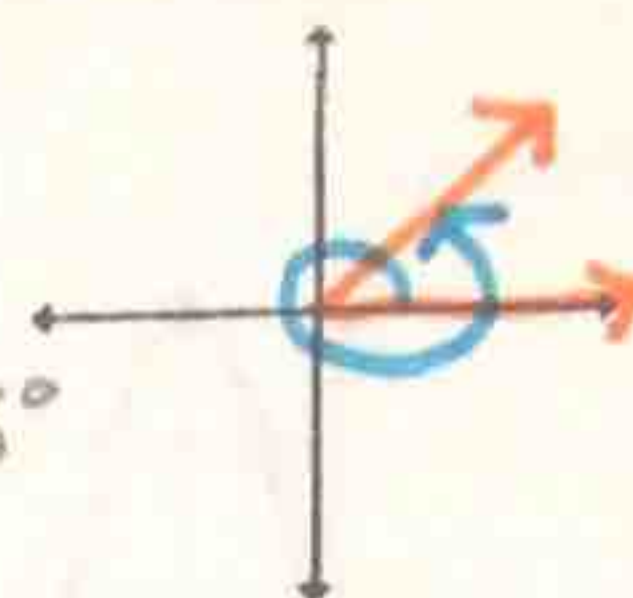
5. -230°

CT $\angle = 130^\circ$



6. 395°

CT $\angle = 35^\circ$



Write each measure in radians. Express the answer in terms of π .

7. 315° $\frac{7\pi}{4}$ radians

8. -450° $-\frac{5\pi}{2}$ radians

9. 210° $\frac{7\pi}{6}$ radians

Write each measure in degrees. If necessary, round your answer to the nearest degree.

10. $\frac{7\pi}{4}$ 315°

11. $\frac{5\pi}{3}$ 300°

12. 6π 1080°

Find the exact values of $\cos\theta$, $\sin\theta$, and $\tan\theta$ for each angle measure.

13. -120°
 $\cos\theta = -1/2$
 $\sin\theta = -\sqrt{3}/2$
 $\tan\theta = \sqrt{3}$

14. 135°
 $\cos\theta = -\sqrt{2}/2$
 $\sin\theta = \sqrt{2}/2$
 $\tan\theta = -1$

15. $-\frac{2\pi}{3}$ radians
 $\cos\theta = -1/2$
 $\sin\theta = -\sqrt{3}/2$
 $\tan\theta = \sqrt{3}$

Write a cosine function for each description.

16. amplitude = $\frac{1}{4}$, period = 2, $a > 0$

$y = \frac{1}{4} \cos \pi \theta$

17. amplitude = 3, period = $\frac{\pi}{2}$, $a < 0$

$y = -3 \cos 4\theta$

Write an equation for each translation.

18. $y = \cos x$, 4 units to the left

$y = \cos(x + 4)$

19. $y = \sin x$, $\frac{\pi}{4}$ units right, 2 units up

$y = \sin(x - \frac{\pi}{4}) + 2$

20. Complete the identities.

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

$\sec \theta = \frac{1}{\cos \theta}$

$\cot \theta = \frac{\cos \theta}{\sin \theta}$

$\tan \theta = \frac{\sin \theta}{\cos \theta}$

Evaluate each expression. Write your answer in exact form. If the expression is undefined, write *undefined*.

21. $\sec(-30^\circ)$ $\frac{2\sqrt{3}}{3}$

22. $\csc 270^\circ$ -1

23. $\cot 210^\circ$ $\sqrt{3}$

24. $\sec 90^\circ$
undefined

25. State the period and asymptotes for $y = \tan(2x)$

period = $\frac{\pi}{2}$ asymptotes = $\pm \frac{\pi}{4}$

Simplify each trigonometric expression.

26. $\sin \theta \sec \theta$

$\tan \theta$

27. $\frac{\tan \theta \sin \theta}{\cos \theta}$

$\tan^2 \theta$

Verify each identity.

28. $\sin \theta \sec \theta \cot \theta = 1$

$1 = 1 \checkmark$

29. $\csc \theta = \cot \theta \sec \theta$

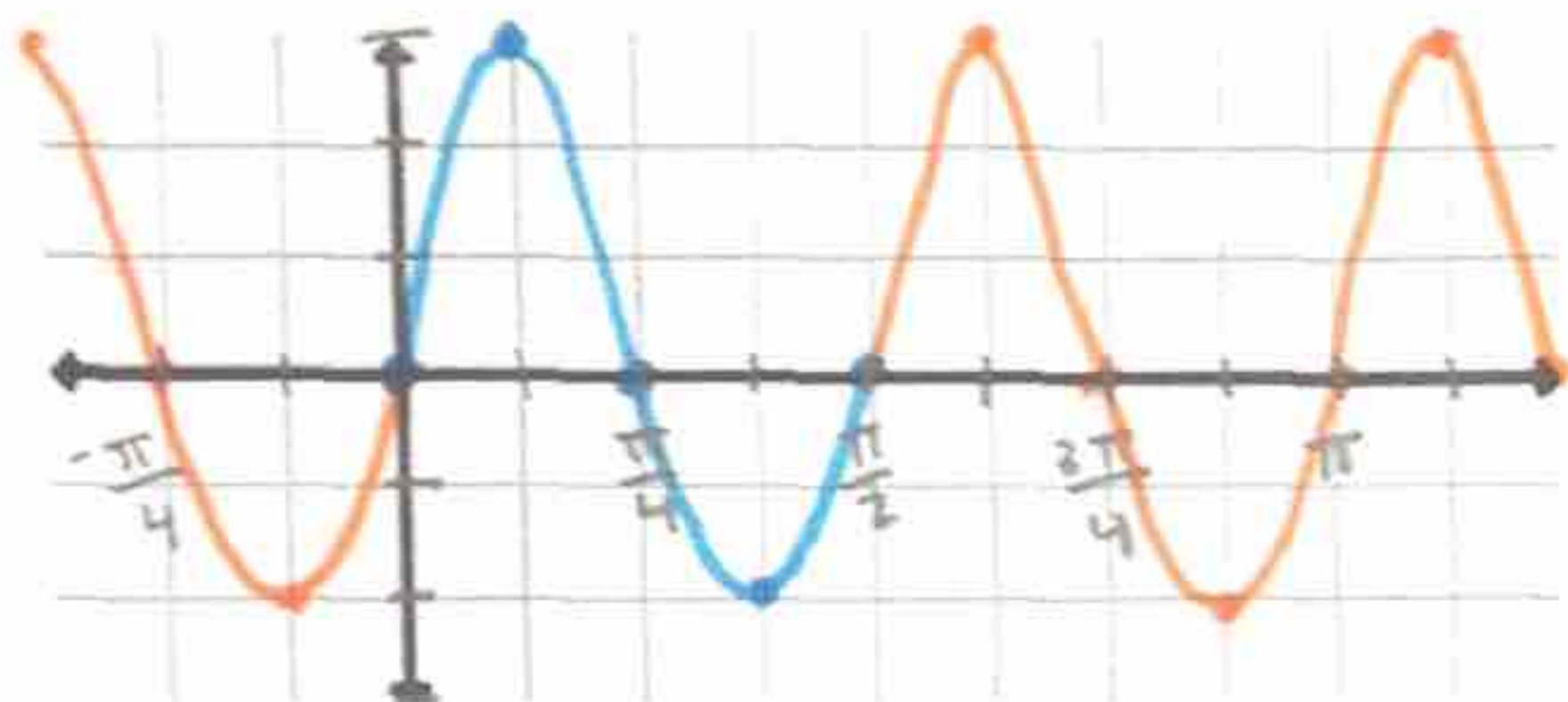
$\csc \theta = \csc \theta \checkmark$

30. $\cos \theta \csc \theta \tan \theta = 1$

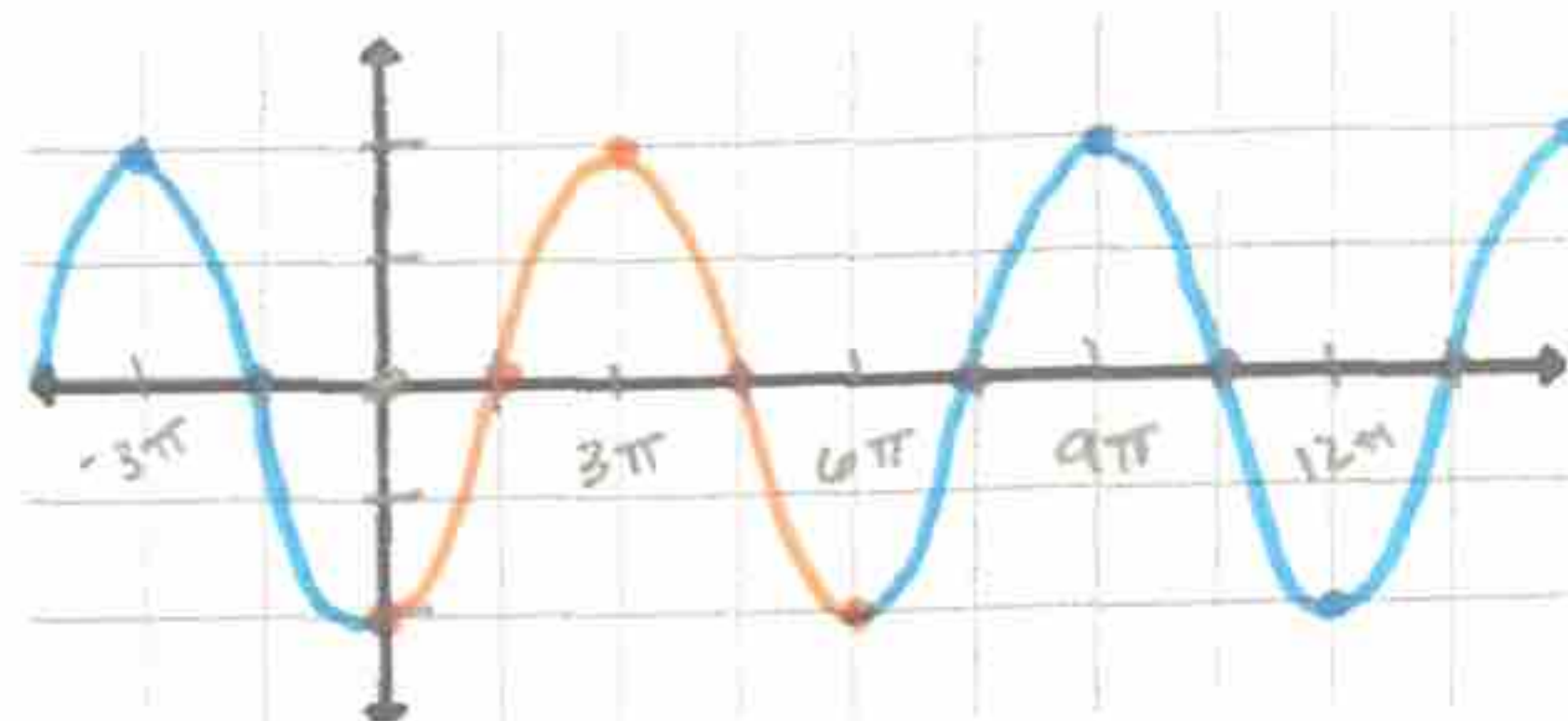
$1 = 1 \checkmark$

Find the amplitude and period of each function. Then sketch one cycle of the graph of each function. Show all work (including tables!).

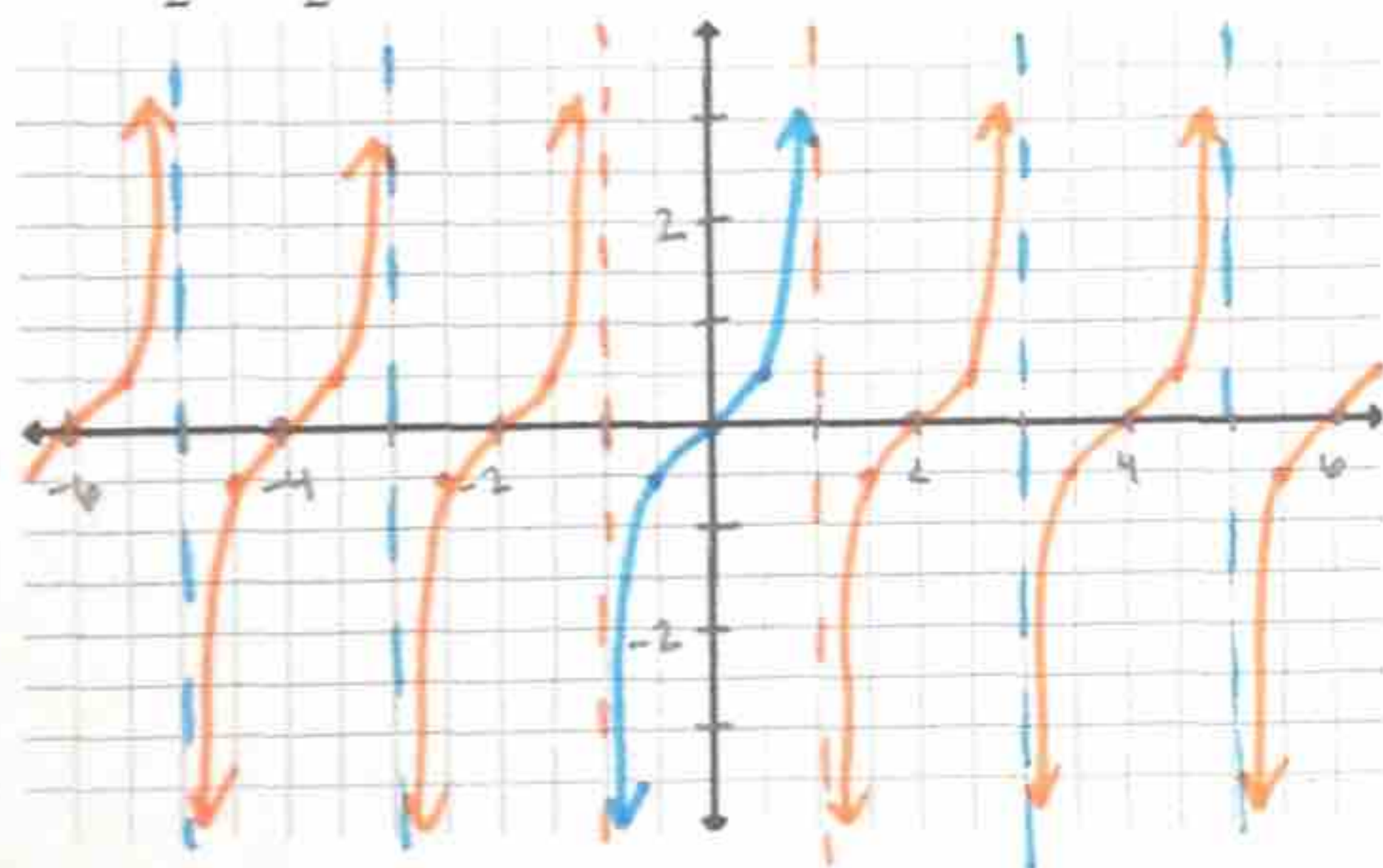
31. $y = 3 \sin 4x$



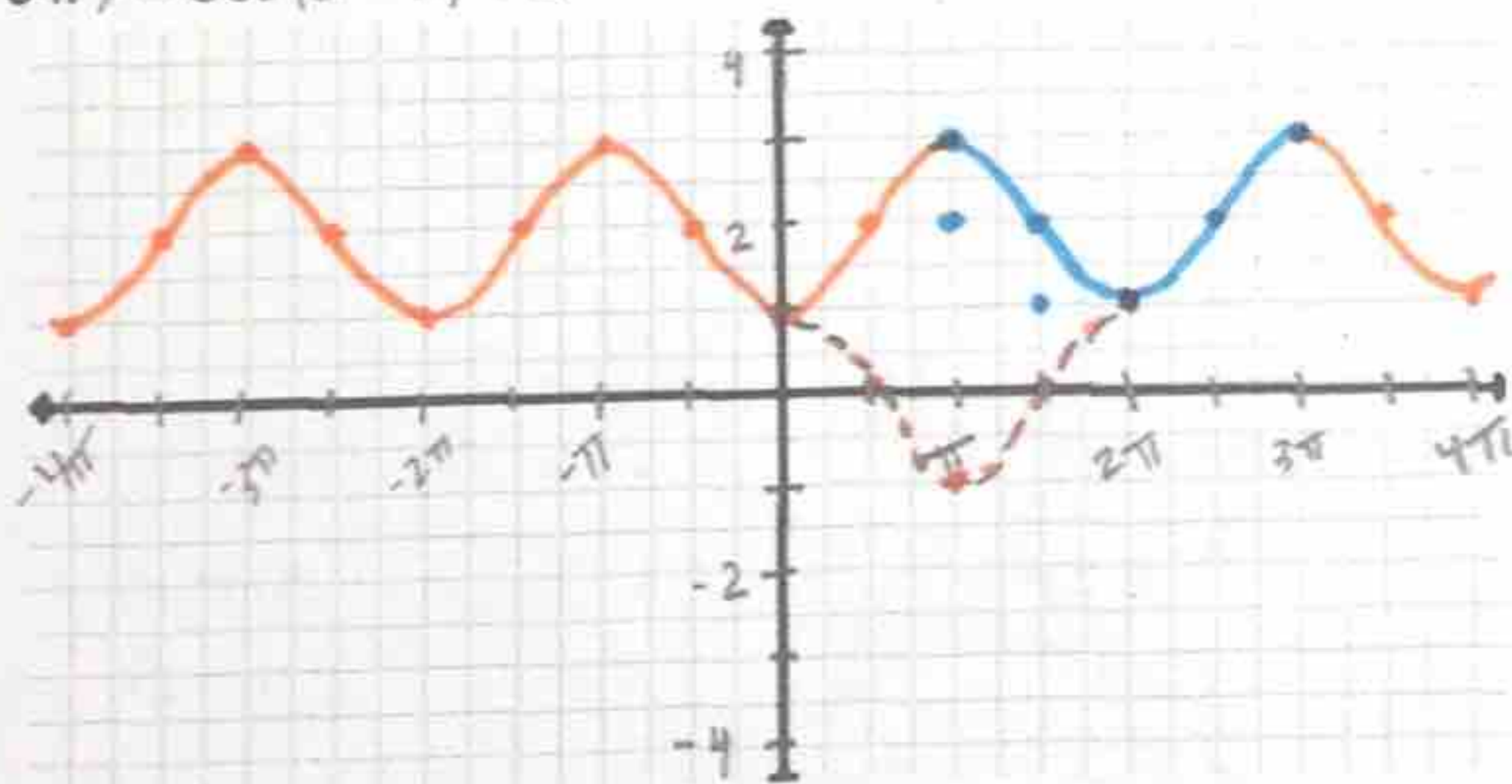
32. $y = -2 \cos \frac{\theta}{3}$



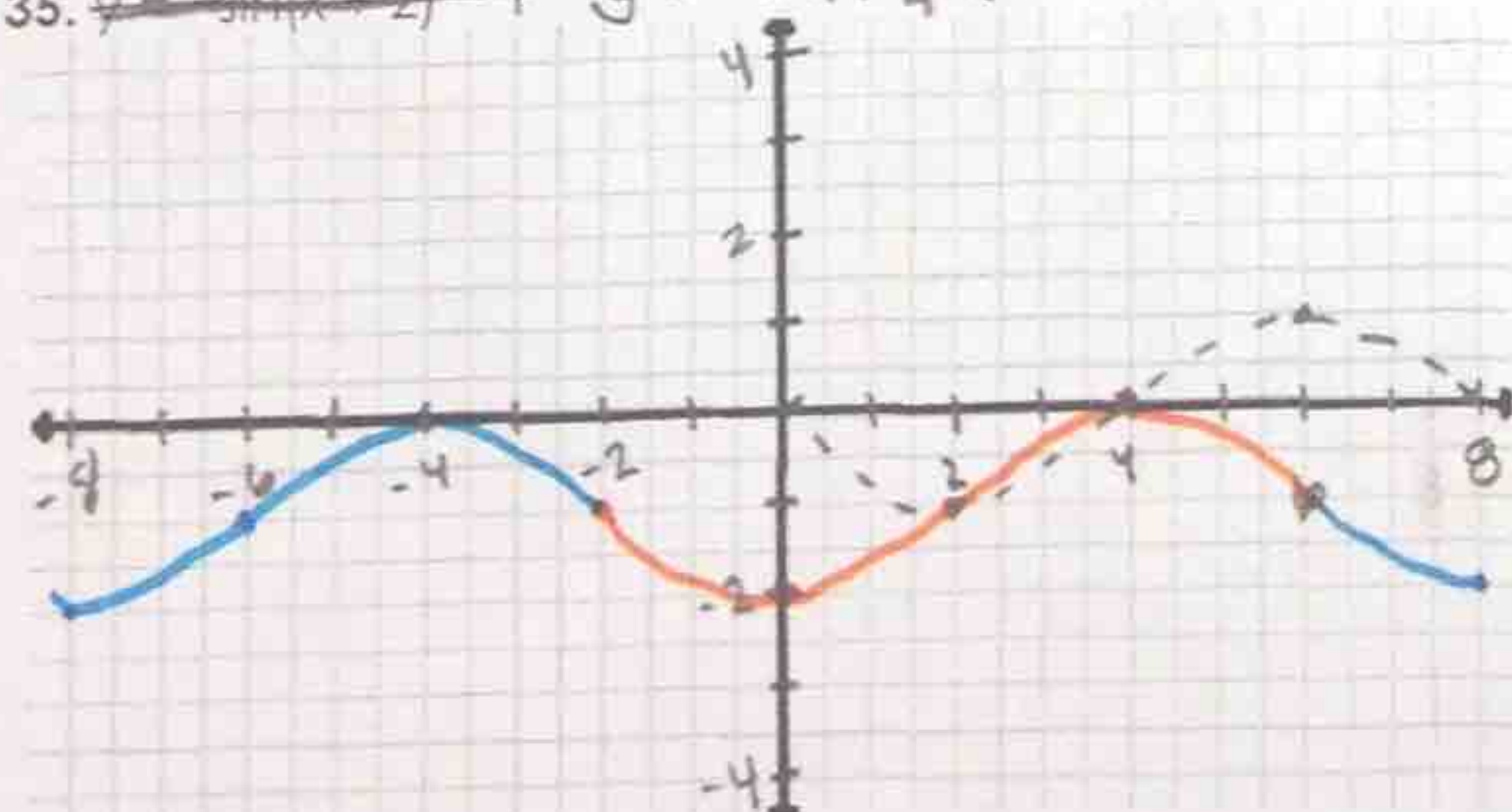
33. $y = \frac{1}{2} \tan \frac{\pi}{2} \theta$



34. $y = \cos(\theta - \pi) + 2$



35. ~~$y = \sin(x+2)$~~ $y = -\sin \frac{\pi}{4}(x+2) - 1$



Unit 7: Trigonometry Study Guide

$$7. 315 \cdot \frac{\pi}{180} = \frac{315\pi}{180} = \frac{7\pi}{4} \text{ radians}$$

$$8. -450^\circ \cdot \frac{\pi}{180^\circ} = \frac{-450\pi}{180} = \frac{-5\pi}{2}$$

$$9. 210 = \frac{\pi}{180} = \frac{210\pi}{180} = \frac{7\pi}{6}$$

$$10. \frac{7\pi}{4} \cdot \frac{180}{\pi} = \frac{1260}{4} = 315^\circ$$

$$11. \frac{5\pi}{3} \cdot \frac{180}{\pi} = \frac{900}{3} = 300^\circ$$

$$12. 6\pi \cdot \frac{180}{\pi} = 1080^\circ$$

$$13. \tan \theta = \frac{-\sqrt{3}}{\frac{2}{-1}} = \frac{-\sqrt{3}}{2} \cdot \frac{-2}{1} = \sqrt{3}$$

$$16. b = \frac{2\pi}{2} = \pi$$

$$18. b = \frac{2\pi}{\frac{\pi}{2}} = 2\pi \cdot \frac{2}{\pi} = 4$$

$$21. \text{CT } \theta = 330^\circ$$

$$\sec -30 = \frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$$

$$22. \text{CSC } 270 = \frac{1}{-1} = -1$$

$$23. \text{cot } 210^\circ = \frac{\cos \theta}{\sin \theta} = \frac{-\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \frac{-\sqrt{3}}{2} \cdot \frac{-2}{1} = \sqrt{3}$$

$$24. \sec 90^\circ = \frac{1}{\cos} = \frac{1}{0} = \text{undefined}$$

$$25. \text{period} = \frac{\pi}{b} = \frac{\pi}{2}$$

$$26. \sin \theta \cdot \frac{1}{\cos \theta} = \frac{\sin \theta}{\cos \theta} = \tan \theta$$

$$27. \frac{\sin \theta}{\cos \theta} \cdot \frac{\sin \theta}{\cos \theta} = \frac{\sin^2 \theta}{\cos^2 \theta} \cdot \frac{1}{\cos \theta} = \frac{\sin^2 \theta}{\cos^3 \theta} = \tan^2 \theta$$

$$28. \sin \theta \cdot \frac{1}{\cos \theta} \cdot \frac{\cos \theta}{\sin \theta} = 1$$

$$29. \quad \csc \theta = \frac{\cos \theta}{\sin \theta} \cdot \frac{1}{\cos \theta} = \frac{1}{\sin \theta} = \csc \theta \quad \checkmark$$

$$30. \quad \cos \theta \cdot \frac{1}{\sin \theta} \cdot \frac{\sin \theta}{\cos \theta} = 1$$

31.

$(\frac{1}{4})\theta$	$\sin \theta (3)$	
$0 = \frac{1}{4} 0$	$0(3) = 0$	amp = 3
$\frac{\pi}{8} = \frac{1}{4} \frac{\pi}{2}$	$1(3) = 3$	b = 4
$\frac{\pi}{4} = \frac{1}{4} \pi$	$0(3) = 0$	period = $\frac{2\pi}{4} = \frac{\pi}{2}$
$\frac{3\pi}{8} = \frac{1}{4} \frac{3\pi}{2}$	$-1(3) = -3$	
$\frac{\pi}{2} = \frac{1}{4} 2\pi$	$0(3) = 0$	

32.

$(3)\theta$	$\cos \theta (-2)$	
$0 = (3) 0$	$1(-2) = -2$	
$\frac{3\pi}{2} = \frac{3}{1} \frac{\pi}{2}$	$0(-2) = 0$	amp = $ -2 = 2$
$3\pi = 3 \pi$	$-1(-2) = 2$	b = $\frac{1}{3}$
$\frac{9\pi}{2} = \frac{3}{1} \frac{3\pi}{2}$	$0(-2) = 0$	
$6\pi = 3 2\pi$	$1(-2) = -2$	period = $\frac{2\pi}{\frac{1}{3}} = 2\pi \cdot \frac{3}{1} = 6\pi$

33.

$(\frac{2}{\pi}) \theta$	$\tan \theta (\frac{1}{2})$	amp = None
$-1 = (\frac{2}{\pi})^{-\frac{\pi}{2}}$	und.	$b = \frac{\pi}{2}$
$-\frac{1}{2} = (\frac{2}{\pi})^{-\frac{\pi}{4}}$	$-1 (\frac{1}{2}) = -\frac{1}{2}$	period = $\frac{\pi}{b} = \frac{\pi}{\frac{\pi}{2}} = \pi \cdot \frac{2}{\pi} = 2$
$0 = 0$	$0 (\frac{1}{2}) = 0$	asymptotes = ± 1
$\frac{1}{2} = (\frac{2}{\pi})^{\frac{\pi}{4}}$	$1 (\frac{1}{2}) = \frac{1}{2}$	
$1 = (\frac{2}{\pi})^{\frac{\pi}{2}}$	und.	

34. Right π up 2

35. $y = -\sin \frac{\pi}{4} (x+2) - 1$

θ	$\cos \theta$
0	1
$\frac{\pi}{2}$	0
π	-1
$\frac{3\pi}{2}$	0
2π	1

Left 2 Down 1

$\frac{\pi}{4} \theta$	$\sin \theta (-1)$
$0 = 0$	$0 (-1) = 0$
$2 = \frac{4}{\pi} \frac{\pi}{2}$	$1 (-1) = -1$
$4 = \frac{4}{\pi} \pi$	$0 (-1) = 0$
$6 = \frac{4}{\pi} \frac{3\pi}{2}$	$-1 (-1) = 1$
$8 = \frac{4}{\pi} 2\pi$	$0 (-1) = 0$