

Cumulative 1-3 practice

Date _____ Period _____

Name a positive and negative coterminal angle to the given angle.

1) $-\frac{10\pi}{3}$

2) $-\frac{7\pi}{12}$

3) $-\frac{19\pi}{9}$

4) -405°

5) 100°

6) -500°

Find the reference angle.

7) 575°

8) 315°

9) $\frac{11\pi}{4}$

10) $\frac{17\pi}{6}$

11) $\frac{35\pi}{12}$

12) -420°

Convert each degree measure into radians and each radian measure into degrees.

13) -150°

14) 895°

15) $\frac{9\pi}{4}$

16) $-\frac{7\pi}{4}$

Find the exact value of each trigonometric function.

17) $\tan -360^\circ$

18) $\csc -600^\circ$

19) $\sin -945^\circ$

20) $\sec -495^\circ$

21) $\cos -\frac{11\pi}{3}$

22) $\cos \frac{17\pi}{4}$

23) $\cot \frac{17\pi}{6}$

24) $\cos 30^\circ$

25) $\cos -360^\circ$

26) $\sin 450^\circ$

Find the exact value of each expression.

27) $\cos \sin^{-1} \frac{\sqrt{105}}{11}$

28) $\tan^{-1}(\sec 0)$

29) $\tan^{-1}\left(\csc -\frac{\pi}{2}\right)$

30) $\csc^{-1}\left(\tan \frac{\pi}{4}\right)$

31) $\sin^{-1} \frac{\sqrt{2}}{2}$

32) $\tan^{-1} -1$

33) $\cos^{-1} \frac{\sqrt{3}}{2}$

34) $\tan^{-1} 0$

35) $\tan^{-1}\left(\tan -\frac{3\pi}{4}\right)$

36) $\sin^{-1}\left(\sin \frac{5\pi}{4}\right)$

Solve each equation for $0 \leq \theta < 360$.

37) $\csc \theta = -\sqrt{2}$

38) $\sec \theta = \sqrt{2}$

39) $-\frac{\sqrt{2}}{2} = \cos \theta$

40) $\sin \theta = -\frac{\sqrt{2}}{2}$

Use the given point on the terminal side of angle θ to find the value of the trigonometric function indicated.

41) $\cot \theta; (-\sqrt{15}, -7)$

42) $\sin \theta; (-16, -13)$

Find the exact values of the five trigonometric ratios not given.

43) $\sin \theta = -\frac{7}{25}$ and $\cos \theta < 0$

44) $\sec \theta = \frac{2\sqrt{3}}{3}$ and $\sin \theta < 0$

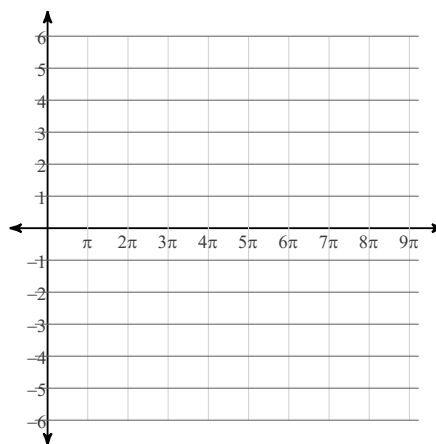
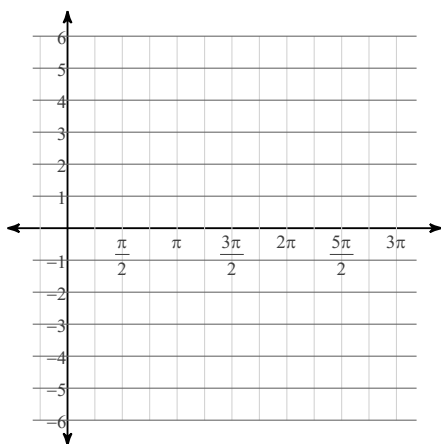
45) Is cosine even, odd, or neither?

46) Is sine function even, odd, or neither?

Find the amplitude, the period in radians, the phase shift in radians, the vertical shift, and two vertical asymptotes (if any). Then sketch the graph using radians.

47) $y = \frac{1}{2} \cdot \tan \frac{\theta}{2} - 2$

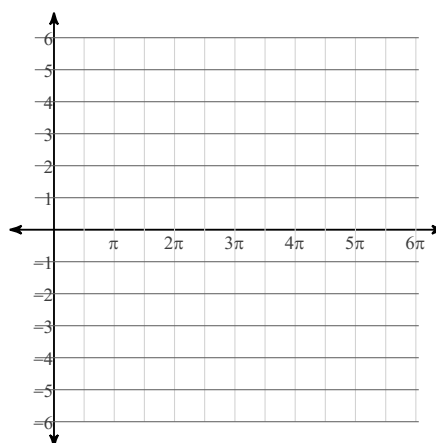
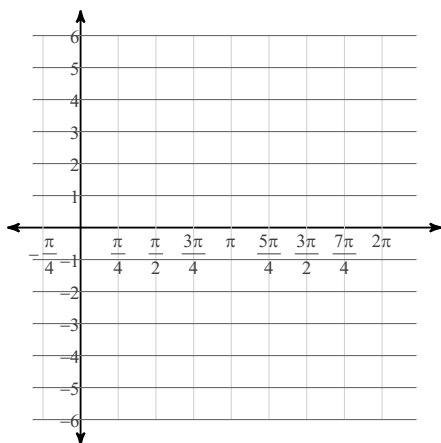
48) $y = 1 + 2\csc \frac{\theta}{3}$



Find the equation of the asymptotes and state the domain and range. Then sketch the graph using radians.

49) $y = 3\sin\left(4\theta + \frac{\pi}{3}\right) - 2$

50) $y = -1 + 2\sec\left(\frac{\theta}{2} + \frac{\pi}{2}\right)$



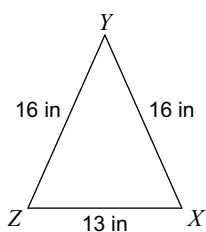
Solve each triangle. Round your answers to the nearest tenth.

51) In $\triangle QRP$, $m\angle Q = 75^\circ$, $p = 23$ km, $r = 29$ km

52) In $\triangle QRP$, $r = 20$ m, $p = 23$ m, $q = 22$ m

Find the area of each triangle to the nearest tenth.

53)



54) In $\triangle PQR$, $m\angle P = 98^\circ$, $r = 10$ in, $q = 15$ in

Solve each triangle. Round your answers to the nearest tenth.

55) In $\triangle EFD$, $m\angle E = 78^\circ$, $m\angle D = 47.7^\circ$, $f = 34$ mi

56) In $\triangle PKH$, $m\angle P = 41^\circ$, $h = 23$ km, $p = 14$ km

57) In $\triangle CAB$, $m\angle C = 103^\circ$, $b = 11$ mi, $c = 39$ mi

58) In $\triangle YZX$, $m\angle Y = 31^\circ$, $x = 35$ ft, $y = 24$ ft

59) Practice pre-req skills, word problems, and derivatives.

Cumulative 1-3 practice

Date _____ Period _____

Name a positive and negative coterminal angle to the given angle.

1) $-\frac{10\pi}{3}$

$\frac{\pi}{3}$

2) $-\frac{7\pi}{12}$

$\frac{5\pi}{12}$

3) $-\frac{19\pi}{9}$

$\frac{\pi}{9}$

4) -405°

45°

5) 100°

80°

6) -500°

40°

Find the reference angle.

7) 575°

35°

8) 315°

45°

9) $\frac{11\pi}{4}$

$\frac{\pi}{4}$

10) $\frac{17\pi}{6}$

$\frac{\pi}{6}$

11) $\frac{35\pi}{12}$

$\frac{\pi}{12}$

12) -420°

60°

Convert each degree measure into radians and each radian measure into degrees.

13) -150°

$-\frac{5\pi}{6}$

14) 895°

$\frac{179\pi}{36}$

15) $\frac{9\pi}{4}$

405°

16) $-\frac{7\pi}{4}$

-315°

Find the exact value of each trigonometric function.

17) $\tan -360^\circ$

0

18) $\csc -600^\circ$

$\frac{2\sqrt{3}}{3}$

19) $\sin -945^\circ$

$\frac{\sqrt{2}}{2}$

20) $\sec -495^\circ$

$-\sqrt{2}$

21) $\cos -\frac{11\pi}{3} = \frac{1}{2}$

22) $\cos \frac{17\pi}{4} = \frac{\sqrt{2}}{2}$

23) $\cot \frac{17\pi}{6} = -\sqrt{3}$

24) $\cos 30^\circ = \frac{\sqrt{3}}{2}$

25) $\cos -360^\circ = 1$

26) $\sin 450^\circ = 1$

Find the exact value of each expression.

27) $\cos \sin^{-1} \frac{\sqrt{105}}{11} = \frac{4}{11}$

28) $\tan^{-1}(\sec 0) = \frac{\pi}{4}$

29) $\tan^{-1}\left(\csc -\frac{\pi}{2}\right) = -\frac{\pi}{4}$

30) $\csc^{-1}\left(\tan \frac{\pi}{4}\right) = \frac{\pi}{2}$

31) $\sin^{-1} \frac{\sqrt{2}}{2} = \frac{\pi}{4}$

32) $\tan^{-1} -1 = -\frac{\pi}{4}$

33) $\cos^{-1} \frac{\sqrt{3}}{2} = \frac{\pi}{6}$

34) $\tan^{-1} 0 = 0$

35) $\tan^{-1}\left(\tan -\frac{3\pi}{4}\right) = \frac{\pi}{4}$

36) $\sin^{-1}\left(\sin \frac{5\pi}{4}\right) = \frac{\pi}{4}$

Solve each equation for $0 \leq \theta < 360$.

37) $\csc \theta = -\sqrt{2}$
 $\{225, 315\}$

38) $\sec \theta = \sqrt{2}$
 $\{45, 315\}$

39) $-\frac{\sqrt{2}}{2} = \cos \theta$
 $\{135, 225\}$

40) $\sin \theta = -\frac{\sqrt{2}}{2}$
 $\{225, 315\}$

Use the given point on the terminal side of angle θ to find the value of the trigonometric function indicated.

41) $\cot \theta; (-\sqrt{15}, -7) = \frac{\sqrt{15}}{7}$

42) $\sin \theta; (-16, -13) = -\frac{13\sqrt{17}}{85}$

Find the exact values of the five trigonometric ratios not given.

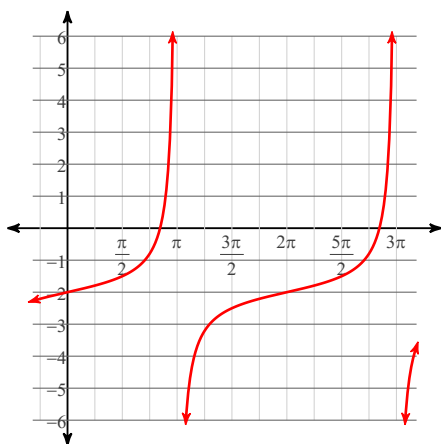
43) $\sin \theta = -\frac{7}{25}$ and $\cos \theta < 0$ $\cos \theta = -\frac{24}{25}$, $\tan \theta = \frac{7}{24}$ 44) $\sec \theta = \frac{2\sqrt{3}}{3}$ and $\sin \theta < 0$
 $\csc \theta = -\frac{25}{7}$, $\sec \theta = -\frac{25}{24}$, $\cot \theta = \frac{24}{7}$, $\frac{1}{\sin \theta} = -\frac{1}{2}$, $\cos \theta = \frac{\sqrt{3}}{2}$, $\tan \theta = -\frac{\sqrt{3}}{3}$
 $\csc \theta = -2$, $\cot \theta = -\sqrt{3}$

45) Is cosine even, odd, or neither?

46) Is sine function even, odd, or neither?

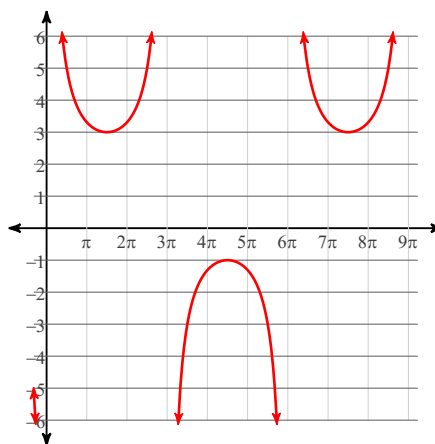
Find the amplitude, the period in radians, the phase shift in radians, the vertical shift, and two vertical asymptotes (if any). Then sketch the graph using radians.

47) $y = \frac{1}{2} \cdot \tan \frac{\theta}{2} - 2$



Amplitude: None
 Period: 2π
 Phase shift: None
 Vert. shift: Down 2
 Vert asym: $x = \pi$
 $x = -\pi$

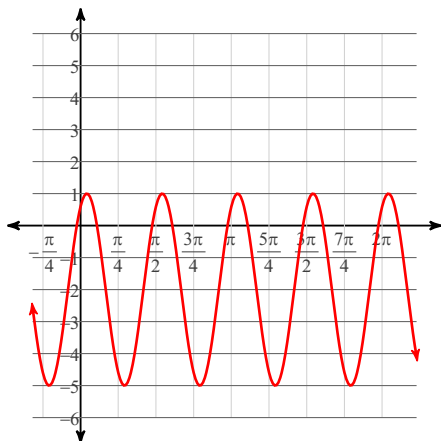
48) $y = 1 + 2\csc \frac{\theta}{3}$



Amplitude: None
 Period: 6π
 Phase shift: None
 Vert. shift: Up 1
 Vert asym: $x = 0$
 $x = 3\pi$

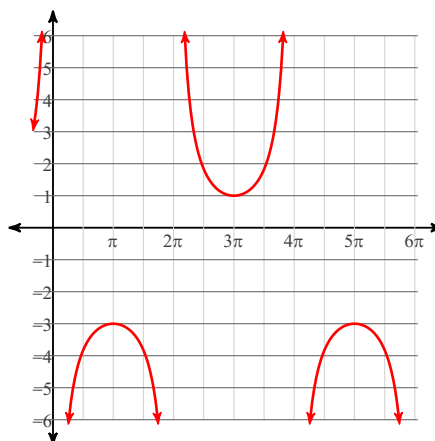
Find the equation of the asymptotes and state the domain and range. Then sketch the graph using radians.

49) $y = 3\sin\left(4\theta + \frac{\pi}{3}\right) - 2$



Vert asym: None

50) $y = -1 + 2\sec\left(\frac{\theta}{2} + \frac{\pi}{2}\right)$



Vert asym: $x = 0$
 $x = -2\pi$

Solve each triangle. Round your answers to the nearest tenth.

51) In $\triangle QRP$, $m\angle Q = 75^\circ$, $p = 23$ km, $r = 29$ km

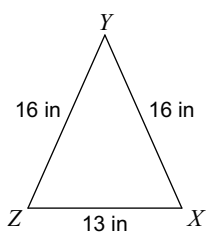
$m\angle R = 61^\circ$, $m\angle P = 44^\circ$, $q = 32$ km

52) In $\triangle QRP$, $r = 20$ m, $p = 23$ m, $q = 22$ m

$m\angle Q = 61.1^\circ$, $m\angle R = 52.7^\circ$, $m\angle P = 66.2^\circ$

Find the area of each triangle to the nearest tenth.

53)



95 in²

54) In $\triangle PQR$, $m\angle P = 98^\circ$, $r = 10$ in, $q = 15$ in

74.3 in²

Solve each triangle. Round your answers to the nearest tenth.

55) In $\triangle EFD$, $m\angle E = 78^\circ$, $m\angle D = 47.7^\circ$, $f = 34$ mi

$m\angle F = 54.3^\circ$, $d = 31$ mi, $e = 41$ mi

56) In $\triangle PKH$, $m\angle P = 41^\circ$, $h = 23$ km, $p = 14$ km

Not a triangle

57) In $\triangle CAB$, $m\angle C = 103^\circ$, $b = 11$ mi, $c = 39$ mi

$m\angle A = 61^\circ$, $m\angle B = 16^\circ$, $a = 35$ mi

58) In $\triangle YZX$, $m\angle Y = 31^\circ$, $x = 35$ ft, $y = 24$ ft

$m\angle Z = 100.3^\circ$, $m\angle X = 48.7^\circ$, $z = 45.8$ ft

Or $m\angle Z = 17.7^\circ$, $m\angle X = 131.3^\circ$, $z = 14.2$ ft

59) Practice pre-req skills, word problems, and derivatives.