Precalculus

Final Exam Review Sheet

Honors Precalculus Final Exam Review
The Ginormous Version

1) Convert the angle $75^\circ 15'20''$ to degrees.

2) Convert 167.79° to degrees, minutes, seconds.

3) If s denotes the length of the arc of a circle of radius r subtended by a central angle θ, find the missing quantity.
R = 9.87 in, θ=20º, s = ?

4) If s denotes the length of the arc of a circle of radius r subtended by a central angle θ, find the missing quantity.
R = $8\,feet, s = 20\,feet, \theta = ?$

5) Convert 48º to radians.

6) Convert -450º to radians.

7) Convert $\frac{3\pi}{10}$ to degrees.

8) Convert $-\frac{23\pi}{8}$ to degrees.

9) If A denotes the area of a section of a circle of radius r formed by the central angle θ, find the missing quantity in the information given below.
R = ?, θ = 5 radians, A = 30 square meters

10) Point P $\left(-\frac{\sqrt{33}}{7}, -\frac{4}{7}\right)$ is the point on the unit circle that corresponds to t. Find the exact value of $\cot t$.

11) Point P $\left(\frac{\sqrt{39}}{8}, \frac{5}{8}\right)$ is the point on the unit circle that corresponds to t. Find the exact value of $\sec t$.

12) The point (6, 8) lies on the terminal side of angle θ. Find the exact value of csc θ.

13) The point (-8, -5) lies on the terminal side of angle θ. Find the exact value of tan θ.

14) What is the value of $\tan\frac{3\pi}{2}$?

15) What is the value of $\cos 45^\circ$?

16) What is the value of $\cot 60^\circ$?

17) What is the value of $\csc 30^\circ - \cos 30^\circ$?

18) What is the value of $\sec\frac{21\pi}{4}$?

19) What is the value of $\sin 135^\circ + \sin 270^\circ$?

20) What is the range of the cosine function?

21) In what quadrant does θ lie if cot θ < 0 and cos θ > 0?

22) If $\cos\theta = \frac{4}{9}$ *and* $\tan\theta < 0$, *find* $\sin\theta$.

23) If $\cot\theta = -\frac{3}{8}$ *and* $\cos\theta < 0$, *find* $\csc\theta$.

24) What is the amplitude of $y = -3\cos 4x$?

25) What is the period of $y = \frac{1}{2}\cos\left(\frac{6\pi}{7}x\right)$?

26) Determine the amplitude and period of $y = -8\sin\left(\frac{1}{4}x\right)$

27) Graph $y = 3\cos(\frac{1}{2}x)$.

28) Write the equation of a sine function with amplitude = 3 and period = to 4.

29) What is the equation for the sine function with amplitude 4, period 3π, and phase shift $\frac{\pi}{3}$?

30) Establish the identity for $\frac{1}{\cos^2\theta} - \frac{1}{\cot^2\theta}$.

31) Establish the identity for $\sin^2\theta + \tan^2\theta + \cos^2\theta$.

32) Establish the identity for $\tan\theta(\cot\theta - \cos\theta)$.

33) Establish the identity for $\frac{\csc\theta\cot\theta}{\sec\theta}$.

34) Use sum and difference formulas to find the value of $\sin 195^\circ$.

35) Use sum and difference formulas to find the value of $\sin 20^\circ \cos 40^\circ + \cos 20^\circ \sin 40^\circ$.

36) If $\sin\alpha = -\frac{20}{29},\ \frac{3\pi}{2} < \alpha < 2\pi$ *and* $\tan\beta = -\frac{12}{5},\ \frac{\pi}{2} < \beta < \pi$ *find* $\cos(\alpha+\beta)$.

37) If $\sin\alpha = \frac{3}{4},\ \frac{\pi}{2} < \alpha < \pi$ *and* $\cos\beta = -\frac{1}{3},\ \frac{\pi}{2} < \beta < \pi$ *find* $\sin(\alpha-\beta)$.

38) If $\cos\theta = \frac{7}{25},\ 0 < \theta < \frac{\pi}{2}$ *find* $\sin(2\theta)$.

39) If $\sec\theta = -\frac{5\sqrt{21}}{21}, \csc\theta > 0$ *find* $\cos(2\theta)$.

40) Solve the equation $2\cos\theta = \sqrt{3}$.

41) Solve the equation $\sin\theta + 1 = 0$.

42) Solve the equation $2\sin^2\theta = \sin\theta$.

43) Solve the triangle using the information given. Round to two decimal places if necessary.
$A = 10^\circ, B = 80^\circ, a = 1$

44) Given a triangle with $b = 4, c = 5,$ *and* $A = 62^\circ$, what is the length of a?

45) $\lim_{x \to -1} (-3x^2 + 7x)$

46) $\lim_{x \to 0} \dfrac{x+2}{3x-4}$

47) $\lim_{h \to -3} \left(\dfrac{h^2 + 4h + 3}{h+3} \right)$

48) $\lim_{x \to 16} \left(\dfrac{x-16}{\sqrt{x}-4} \right)$

49) $\lim_{x \to -1} (4x^3 - 2x + 123)^{1/3}$

50) Solve: $3\cos^2 x - 2\cos x - 7 = 0$

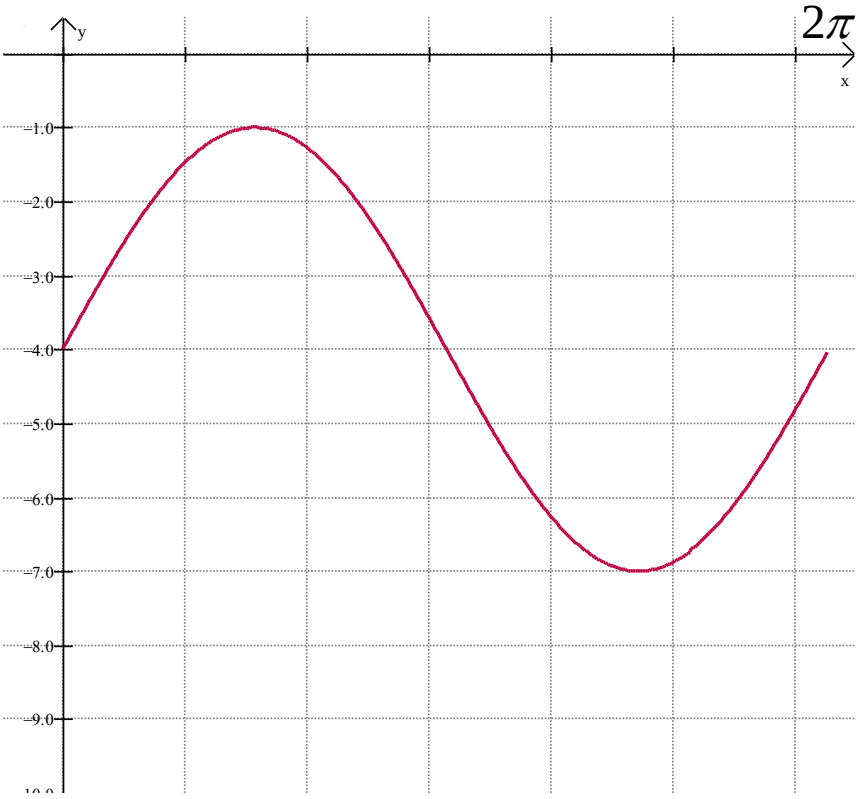
51) $\sin^{-1}\left(-\dfrac{\sqrt{2}}{2} \right)$

52) $\tan^{-1}\left(\dfrac{\sqrt{3}}{3} \right)$

53) **Graph** $y = 2\cos 5(x + 2\pi) - 3$

54) **Graph** $y = -\sin \dfrac{\pi}{3}(x-4) + 1$

55) Write an equation for the graphs shown below:



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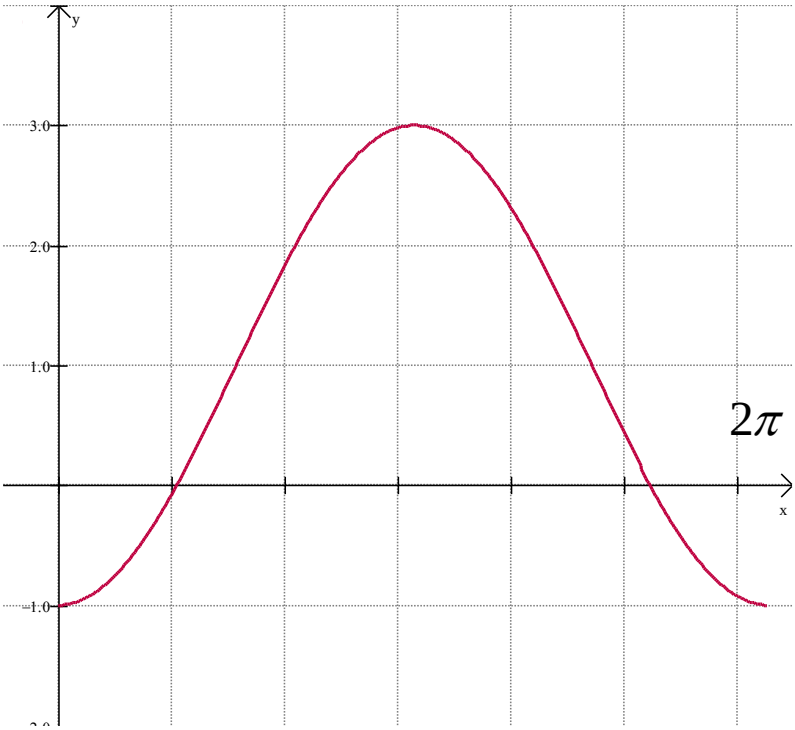
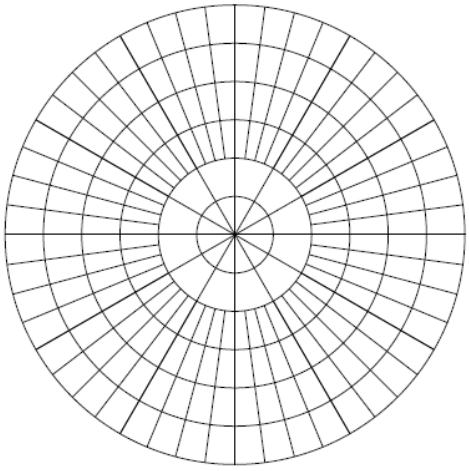
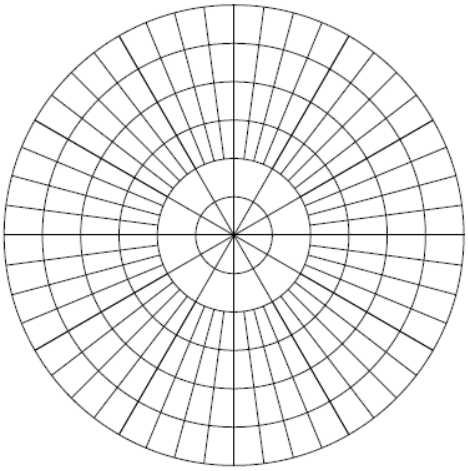


For #56-57, plot each point given in polar coordinates.

56) $(-1, \pi)$



57) $\left(2, \frac{\pi}{4}\right)$



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In #58-59, polar coordinates of a point are given. Find the rectangular coordinates of each point.

58) $\left(4, \frac{3\pi}{2}\right)$

59) $(-2, 180°)$

In #60-61, the rectangular coordinates of a point are given. Find polar coordinates for each point.

60) (-4, 0)

61) (2, -2)

In #62-64, eliminate the parameter to express the parametric equation in terms of x and y.

62) $x = t^2$
$y = t - 2$

63) $x = \sqrt{t}$
$y = 1 - t$

64) $x = \frac{1}{t}$
$y = t + 1$