

Precalculus
Final Exam Review Sheet

- 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, $\theta = 20^{\circ}$, $s = ?$
- 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 48° to radians.
- 6) Convert -450° 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.
 $R = ?$, $\theta = 5$ 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 $\csc \theta$.
- 13) The point $(-8, -5)$ lies on the terminal side of angle θ . Find the exact value of $\tan \theta$.

Precalculus
Final Exam Review Sheet

- 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 $\cot \theta < 0$ and $\cos \theta > 0$?
- 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 $y = 3 \cos\left(\frac{1}{2}x\right)$.
- 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 $\frac{\pi}{3}$?

Precalculus
Final Exam Review Sheet

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

Precalculus
Final Exam Review Sheet

46) $\lim_{x \rightarrow 0} \frac{x+2}{3x-4}$

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

48) $\lim_{x \rightarrow 16} \left(\frac{x-16}{\sqrt{x}-4} \right)$

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

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

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

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

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

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

Precalculus
Final Exam Review Sheet

55) Write an equation for the graphs shown below:

