MATH 1316

REVIEW FOR FINAL EXAM

Problem	Answer
1. Find the complete solution (to the nearest tenth) if $\sin\theta$=-.98544973 and $0 \le \theta < 2\pi$.	4.5, 4.9
2. Solve $2\sin\theta - \sqrt{3} = 0$, if $0 \le \theta < 2\pi$.	$\frac{\pi}{3}, \frac{2\pi}{3}$
3. How many solutions does $\cos^2\theta - 2\cos\theta = 3$ have if $0 \le \theta < 2\pi$?	1
4. Solve $\tan^2\theta - 2\tan\theta - 3 = 0$ for $0 \le \theta < 2\pi$ (in radians).	$\frac{3\pi}{4}, \frac{7\pi}{4}$, 1.249, 4.391
5. Solve $\tan^2\theta - \tan\theta = 0$ for $0 \le \theta < 2\pi$.	$0, \frac{\pi}{4}, \frac{5\pi}{4}, \pi$
6. Solve $2\cos^2\theta = 1 - 3\cos\theta$ for $0 \le \theta < 2\pi$.	1.286, 4.997
7. Solve $\sin^2\theta = 3\cos\theta$ for $0 \le \theta < 2\pi$.	1.26, 5.02
8. Solve $2\sin^2\theta + \cos\theta - 1 = 0$ for $0^\circ \le \theta < 360^\circ$.	0°, 120°, 240°
9. Solve $\tan^2\theta + \sec\theta = 1$ for $0^\circ \le \theta < 360^\circ$.	0°, 120°, 240°
10. Solve $3\sin\theta + 1 = 2\cos^2\theta$ for $0^\circ \le \theta < 360^\circ$. Round θ to the nearest whole degree.	16°, 164°
11. Solve $\cos^2\theta = 3\sin\theta$ for $0 \le \theta < 2\pi$ in radians correct to three decimal places.	0.308, 2.834
12. Find the sum of the solutions of $\cos 2\theta = \sin\theta$ for $0^\circ \le \theta < 360^\circ$.	450°
13. Solve $\cos\theta = \sin 2\theta$ for $0 \le \theta < 2\pi$.	$\frac{\pi}{6}, \frac{5\pi}{6}, \frac{\pi}{2}, \frac{3\pi}{2}$
14. Find the sum of the solutions of $5\tan 2\theta - 5\sqrt{3} = 0$ if $0^\circ \le \theta < 360^\circ$.	660°
15. Evaluate (in radians): A. $\text{Sin}^{-1}.8310$ B. $\text{Cos}^{-1}.4$ C. $\text{Arc}\cos 2.3$ D. $\text{Arc}\sin\left(-\frac{1}{3}\right)$	A. .9809 B. 1.1593 C. not defined D. -.3398

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16. Find the given angle (in radians) from memory. A. $\text{Cos}^{-1}\left(-\frac{1}{2}\right)$ B. $\text{Arccos}(-1)$ C. $\text{Arcsin}\left(-\frac{\sqrt{3}}{2}\right)$ D. $\text{Sin}^{-1}\left(\frac{\sqrt{3}}{2}\right)$	A. $\frac{2\pi}{3}$ B. π C. $-\frac{\pi}{3}$ D. $\frac{\pi}{3}$
17. Give the exact values for A. $\text{Cot}^{-1}\frac{\sqrt{3}}{3}$ B. $\text{Arcsin}\frac{\sqrt{3}}{2}$ C. $\text{Arccos}\left(-\frac{1}{2}\right)$ D. $\text{Cot}^{-1}\left(-\sqrt{3}\right)$ E. $\cos 150^\circ$ F. $\cot\left(-\frac{\pi}{2}\right)$	A. $\frac{\pi}{3}$ B. $\frac{\pi}{3}$ C. $\frac{2\pi}{3}$ D. $\frac{5\pi}{6}$ E. $-\frac{\sqrt{3}}{2}$ F. 0
18. $\text{Arccot}\left(\frac{3}{\sqrt{3}}\right)$ =	$\frac{\pi}{6}$
19. Give the domain and range for $y = \text{Arcsin}\, x$.	Domain: $-1 \le x \le 1$ Range: $-\frac{\pi}{2} \le y \le \frac{\pi}{2}$
20. State the quadrant where each angle terminates. A. -210° B. 135° C. 420° D. -300° E. 210° F. -60° G. 315° H. 150°	A. II B. II C. I D. I E. III F. IV G. IV H. II
21. Change the given measurements to decimal degrees. A. $40^\circ 45' 50''$ B. $30^\circ 10''$	A. 40.764° B. 30.003°
22. In which quadrant is an angle of 5?	IV

23. Find a positive coterminal angle less than one revolution	

for each of the given angles. A. -30° B. 700° C. -100° D. -400°	A. 330° B. 340° C. 260° D. 320°
24. In what quadrant does $-\frac{16\pi}{7}$ terminate?	IV
25. Change the degree measures to radian measures. A. 240° B. -90° C. -600°	A. $\frac{4\pi}{3}$ B. $-\frac{\pi}{2}$ C. $-\frac{10\pi}{3}$
26. Change $\frac{3\pi}{4}$ to degrees.	135°
27. Find the length of an arc with central angle of 40° and radius 1.	$\frac{2\pi}{9}$
28. How far (to the nearest cm) does the tip of a pendulum move if it is 35 cm long and swings through an arc of 120°.	73 cm
29. If P(s,t) is a point on the terminal side of an angle δ which is also on a unit circle, the $\cos\delta =$	s
30. If P(s,t) is a point on the terminal side of an angle δ which is on a unit circle, then $\tan\delta =$	$\frac{t}{s}$
31. If β is an angle in standard position, what are the coordinates of the point of intersection of the terminal side of β and the unit circle.	$(\cos\beta, \sin\beta)$
32. What is the reciprocal of the sine?	cosecant
33. What is the reciprocal of the secant?	cosine
34. Write the Pythagorean Identities.	$\sin^2\theta + \cos^2\theta = 1$ $1 + \tan^2\theta = \sec^2\theta$ $\cot^2\theta + 1 = \csc^2\theta$
35. What is the value of $\tan^2 214^\circ - \sec^2 214^\circ$?	-1
36. Find $\cot\theta$ if $\sec\theta = -\frac{\sqrt{5}}{2}$ and $\sin\theta > 0$.	-2
37. In Quadrant I, which trigonometric functions are positive?	All are positive in Quadrant I.
38. In Quadrant II, which trigonometric functions are negative?	cosine, tangent, cotangent, secant

39. Which one of the following is **NOT** a fundamental identity? A. $\sin\theta = \frac{1}{\csc\theta}$ B. $\sin^2\theta = 1 - \cos^2\theta$ C. $1 + \tan^2\theta = \sec^2\theta$ D. $\tan\theta = \frac{\sin\theta}{\cos\theta}$ E. All are fundamental identities.	E. All are fundamental identities.
40. Which of the following is true? A. $2\cos^2 3\theta - 1 = \cos 6\theta$ B. $\csc^2 5\theta - 1 = \cot^2 5\theta$ C. $\frac{1+\cos 8\theta}{2} = \cos^2 4\theta$ D. $2\sin\theta\cos\theta = \sin 2\theta$ E. all of the above	E. all of the above
41. Which of the following statements is false? A. $\cos^2\theta + \sin^2\theta = 1$ B. $\tan^2\theta = \sec^2\theta - 1$ C. $\cos\theta\sec\theta = 1$ D. $\cot^2\theta - 1 = \csc^2\theta$ E. None of these are false.	D. $\cot^2\theta - 1 = \csc^2\theta$
42. Which of the following is an equivalent form of $\tan\theta = \frac{\sin\theta}{\cos\theta}$? A. $\tan\theta\cos\theta = \sin\theta$ B. $\cos\theta = \frac{\sin\theta}{\tan\theta}$ C. $\tan\theta = \sin\theta\sec\theta$ D. all of these E. none of these	D. all of these
43. Which of the following is **NOT** an equivalent form of $1 + \tan^2\theta = \sec^2\theta$? A. $\tan^2\theta = \sec^2\theta - 1$ B. $\tan\theta = \pm\sqrt{\sec^2\theta - 1}$ C. $\sec\theta = \pm\sqrt{1 + \tan^2\theta}$ D. $\sec^2\theta - \tan^2\theta = 1$ E. none of these	B. $\tan\theta = \pm\sqrt{\sec^2\theta - 1}$

44. If $\sin\theta = -\sqrt{1-\cos^2\theta}$, then θ could be in quadrants A. I and II B. III and IV C. I and IV D. II and III E. none of these	B. III and IV
45. If $\cos\theta = \sqrt{1-\sin^2\theta}$, then θ could be in quadrants A. I and II B. III and IV C. I and IV D. II and III E. none of these	C. I and IV
46. State the quadrants in which θ may lie to make the given expressions true. A. $\cos\theta = \sqrt{1-\sin^2\theta}$ and $\tan\theta < 0$ B. $\tan\theta = -\sqrt{\sec^2\theta - 1}$ and $\cos\theta < 0$ C. $\sec\theta = \sqrt{1+\tan^2\theta}$ and $\sin\theta > 0$ D. $\sin\theta = -\sqrt{1-\cos^2\theta}$ and $\cos\theta > 0$	A. IV B. II C. I D. IV
47. Which of the following are true in Quadrant III? A. Sine and tangent are positive. B. Tangent and cosecant are positive. C. Cotangent is positive and cosine is negative. D. Cotangent and cosecant are negative. E. None of these are true.	C. Cotangent is positive and cosine is negative.
48. Find the values of the trigonometric functions for an angle whose measure is 12.5°. Round to four decimal places.	sin 12.5° = .2164 cos 12.5° = .9763 tan 12.5° = .2217 cot 12.5° = 4.5107 sec 12.5° = 1.0243 csc 12.5° = 4.6202
49. Give the reference angle for each of the following: A. 231° B. 318° C. $\frac{6\pi}{7}$	A. 51° B. 42° C. $\frac{\pi}{7}$
50. Find the exact value of $\tan\frac{5\pi}{6}$.	$-\frac{\sqrt{3}}{3}$

51. Using the definition of the trigonometric functions, find their values for an angle θ whose terminal side passes through $(\sqrt{2},3)$.	$\sin\theta = \frac{3\sqrt{11}}{11}$ $\cos\theta = \frac{\sqrt{22}}{11}$ $\tan\theta = \frac{3\sqrt{2}}{2}$ $\cot\theta = \frac{\sqrt{2}}{3}$ $\sec\theta = \frac{\sqrt{22}}{2}$ $\csc\theta = \frac{\sqrt{11}}{3}$
52. Find the exact value of $\sin\frac{11\pi}{3}$.	$-\frac{\sqrt{3}}{2}$
53. Find the exact value of $\cos\left(-\frac{3\pi}{4}\right)$.	$-\frac{\sqrt{2}}{2}$
54. Cosecant is undefined for an angle of A. 0. B. π. C. 2π. D. all of these E. none of these	D. all of these
55. If $\sin x = \frac{1}{2}$ and $\frac{\pi}{2} \le x \le \pi$, the $x = ?$ A. $\frac{\pi}{6}$ B. $\frac{\pi}{3}$ C. $\frac{2\pi}{3}$ D. $\frac{5\pi}{6}$ E. none of these	D. $\frac{5\pi}{6}$
56. Find the period of $y + 2 = \frac{1}{2}\cos(\pi x + 3\pi)$.	2
57. Find the amplitude of $y = 2\cos 3x$.	2
58. For $y + 5 = \sin\left(x + \frac{\pi}{2}\right)$, find A. the amplitude. B. the period.	A. 1 B. 2π

59. For $y = \tan\left(\frac{1}{2}x + 4\right) - 1$, find A. the amplitude. B. the period. C. the phase shift. D. the vertical translation.	A. none B. 2π C. 8 left D. 1 down
60. $\cot\left(-\frac{\pi}{2}\right) =$ A. 0 B. 2 C. $-\frac{\sqrt{3}}{2}$ D. undefined E. none of these	A. 0
61. The graph of $y = 4\cos\left(2x + \frac{\pi}{3}\right)$ is similar to $y = \cos x$ but is shifted A. $\frac{\pi}{3}$ units left. B. $\frac{\pi}{3}$ units right. C. $\frac{\pi}{6}$ units left D. $\frac{\pi}{6}$ units right E. none of these	C. $\frac{\pi}{6}$ units left
62. Simplify using only sines, cosines, and the fundamental identities: $\sin\theta + \frac{\cos^2\theta}{\sin\theta}$	$\frac{1}{\sin\theta}$
63. Simplify $\frac{\sec\theta + \csc\theta}{\tan\theta\cot\theta}$ using only sines and cosines.	$\frac{\sin\theta + \cos\theta}{\sin\theta\cos\theta}$
64. $\sec^2 7\theta - 1$ is identical to A. $\tan^2\theta$ B. $\cos^2 7\theta$ C. $\tan 7\theta$ D. $\tan^2 7\theta$ E. none of these	D. $\tan^2 7\theta$

65. $(\sec\theta - \cos\theta)^2$ is identical to A. $\sec^2\theta - \cos^2\theta$ B. $\sec^2\theta + \cos^2\theta$ C. $\tan^2\theta - \cos^2\theta$ D. $\tan^2\theta - \sin^2\theta$ E. none of these	D. $\tan^2\theta - \sin^2\theta$
66. Verify the following identity: $\frac{\sec\theta}{\tan\theta} - \frac{1}{\tan\theta\sec\theta} = \sin\theta$	Answers may vary.
67. $\frac{\csc\theta}{\cos\theta} - \frac{\cos\theta}{\sin\theta}$ simplifies to A. $\sin^2\theta$ B. $\cos\theta$ C. $\cot\theta$ D. $\tan\theta$ E. none of these	D. $\tan\theta$
68. If $\frac{\cos^2\theta(\tan^2\theta + 1)}{\cot^2\theta}$ is changed to sines and cosines and then completely simplified, the result is A. $\sin^4\theta + \sin^2\theta$ B. 1 C. $\frac{\cos^4\theta}{\sin^4\theta}$ D. $\frac{\sin^2\theta}{\cos^2\theta}$ E. none of these	D. $\frac{\sin^2\theta}{\cos^2\theta}$
69. The expression $\sin\theta\cos\theta(\tan\theta + \cot\theta)$ is identical to A. 1 B. $\cos 2\theta$ C. $\sin\theta\cos\theta$ D. $\sin\theta - \cos\theta$ E. none of these	A. 1
70. The best procedure for proving $\frac{\sin^4\theta - \cos^4\theta}{2\sin^2\theta - 1} = 1$ is to begin by A. breaking up the fraction. B. factoring. C. changing to sines and cosines. D. multiplying by the conjugate. E. none of these	B. factoring

71. Verify the following identity: $\tan^2\beta\left(\cot^2\beta+\cos\beta+1\right)=\sec\beta\left(\sin^2\beta+\sec\beta\right)$	Answers may vary.
72. The expression $\frac{1+2\cos\theta-\cos^2\theta}{\cos^2\theta}-\frac{1-\sin\theta}{1+\sin\theta}$ can be reduced to A. $2\sec\theta+2\tan\theta\sec\theta+\sec^2\theta$ B. $2\sec\theta+4\sec\theta-\sec^2\theta$ C. $2\sec\theta-1-2\tan\theta\sec\theta+\tan^2\theta$ D. $\frac{2\cos\theta+2\sin\theta-1}{\cos^2\theta}$ E. none of these	D. $\frac{2\cos\theta+2\sin\theta-1}{\cos^2\theta}$
73. Which of the following is **NOT** an identity? A. $\sin2\theta=\frac{\tan2\theta}{\sec2\theta}$ B. $\sec2\theta=\left(\frac{\tan2\theta}{\cos2\theta}\right)\cot2\theta$ C. $\cot2\theta\sin^2 2\theta=\cos2\theta\sin2\theta$ D. $\tan2\theta\sec2\theta=\sin2\theta\cos2\theta$ E. These are all identities.	D. $\tan2\theta\sec2\theta=\sin2\theta\cos2\theta$
74. Write $\cos31^\circ$ in terms of its cofunction.	$\sin59^\circ$
75. Write $\sin\left(-22^\circ\right)$ as a function of a positive acute angle.	$-\sin22^\circ$
76. Write $\cos\left(-39^\circ\right)$ as a function of a positive acute angle.	$\cos39^\circ$
77. The graph of $y=-6\sin4\theta$ has amplitude A. $\frac{\pi}{2}$ B. $\frac{\pi}{4}$ C. -6 D. 6 E. none of these	D. 6
78. Evaluate $\sin210^\circ\cos185^\circ-\cos210^\circ\sin185^\circ$.	$\sin25^\circ\approx.4226$
79. Evaluate $\cos175^\circ\cos113^\circ+\sin175^\circ\sin113^\circ$.	$\cos62^\circ\approx.4695$
80. Write $\tan\left(30^\circ+\theta\right)$ as a function of θ only.	$\frac{1+\sqrt{3}\tan\theta}{\sqrt{3}-\tan\theta}$
81. Write $\cos\left(\theta-\frac{\pi}{3}\right)$ as a function of θ only.	$\frac{1}{2}\left(\cos\theta+\sqrt{3}\sin\theta\right)$

82. If $\alpha = \frac{\pi}{2}$ and $\beta = -\theta$ and these values are substituted into $\cos(\alpha+\beta) = \cos\alpha\cos\beta - \sin\alpha\sin\beta$, then the result is: A. $\cos\left(\frac{\pi}{2}-\theta\right) = \sin(-\theta)$ B. $\cos\left(\frac{\pi}{2}-\theta\right) = -\cos\theta$ C. $\cos\left(\frac{\pi}{2}-\theta\right) = -\sin(-\theta)$ D. $\cos\left(\frac{\pi}{2}-\theta\right) = -\sin\theta$ E. none of these	C. $\cos\left(\frac{\pi}{2}-\theta\right) = -\sin(-\theta)$
83. $\sin(\theta+A)+\sin(\theta-A)$ simplifies to A. $2\sin\theta$ B. $2\sin\theta\cos A$ C. $2\cos\theta\sin A$ D. $\sin\theta\cos A$ E. none of these	B. $2\sin\theta\cos A$
84. If $\cos(\alpha+\beta) = \cos\alpha\cos\beta - \sin\alpha\sin\beta$, then an exact value for $\cos 165^\circ$ is A. $\frac{\sqrt{2}-\sqrt{6}}{4}$ B. $\frac{\sqrt{6}-\sqrt{2}}{4}$ C. $\frac{\sqrt{2}+\sqrt{6}}{4}$ D. –.9659 E. none of these	E. none of these
85. Which of the following is **NOT** a double-angle identity? A. $\sin 2\theta = 2\sin\theta\cos\theta$ B. $\cos 2\theta = \cos^2\theta - \sin^2\theta$ C. $\cos 2\theta = 1-2\cos^2\theta$ D. $\cos 2\theta = 1-2\sin^2\theta$ E. $\tan 2\theta = \frac{2\tan\theta}{1-\tan^2\theta}$	C. $\cos 2\theta = 1-2\cos^2\theta$

86. $\cos^2 3\theta - \sin^2 3\theta$ is identical to A. 1 B. $\tan^2 3\theta$ C. $\cos 6\theta$ D. $\cos 15\theta$ E. none of these	C. $\cos 6\theta$
87. If $\cos\theta = \frac{3}{5}$ and θ is in Quadrant IV, then $\sin 2\theta$ is A. $\frac{4}{5}$ B. $\frac{16}{25}$ C. $-\frac{4}{5}$ D. $-\frac{16}{25}$ E. none of these	E. none of these
88. If $\sin\theta = -\frac{3}{5}$ and θ is in Quadrant III, find $\cos 2\theta$.	$\frac{7}{25}$
89. The exact value of $\cos 15^\circ$ is	$\frac{\sqrt{2}+\sqrt{6}}{4}$
90. Which of the following is **FALSE**? A. $\cos\frac{1}{2}\theta = \pm\sqrt{\frac{1+\cos\theta}{2}}$ B. $\sin\frac{1}{2}\theta = \pm\sqrt{\frac{1-\cos\theta}{2}}$ C. $\tan\frac{1}{2}\theta = \frac{1-\cos\theta}{\sin\theta}$ D. $\tan\frac{1}{2}\theta = \frac{\sin\theta}{1+\cos\theta}$ E. They are all true.	E. They are all true.
91. If $\cos\frac{1}{2}\theta = \sqrt{\frac{1+\cos\theta}{2}}$, then in which quadrants is the angle $\frac{1}{2}\theta$? A. I or II B. I or III C. I or IV D. II or III E. none of these	C. I or IV

92. If $\cot 2\theta = \frac{3}{4}$, and θ is in the first quadrant, then $\tan\theta$ is A. $\frac{\sqrt{5}}{5}$ B. $\frac{2\sqrt{5}}{5}$ C. $\frac{1}{2}$ D. $-\frac{1}{2}$ E. none of these	C. $\frac{1}{2}$
93. The expression $\sin 4\theta$ is equivalent to A. $4\sin\theta\cos^3\theta - 4\sin^3\theta\cos\theta$ B. $8\sin^3\theta - 4\sin\theta\cos\theta$ C. $\cos^2 2\theta - 2\sin\theta\cos\theta - \sin^2\theta$ D. $\cos^2 2\theta - \sin 2\theta$ E. none of these	A. $4\sin\theta\cos^3\theta - 4\sin^3\theta\cos\theta$
94. $\frac{1+\cos 2\theta}{\sin 2\theta}$ simplifies to A. $\tan 2\theta$ B. $\cot 2\theta$ C. $\cot\theta$ D. $1+\cot 2\theta$ E. none of these	C. $\cot\theta$
95. Verify the following identity: $\cot 2\theta \sin 2\theta = \cos^2\theta - \sin^2\theta.$	Proofs vary.
96. Solve $\sin\theta = .601815$ if $-90^\circ \le \theta \le 90^\circ$.	37°
97. If $0 \le \theta < 2\pi$ and $4\sqrt{3}\cos\theta - 2 = 4$, then the complete solution is A. $\frac{\pi}{6}, \frac{5\pi}{6}$ B. $\frac{\pi}{6}, \frac{11\pi}{6}$ C. $\frac{\pi}{3}, \frac{5\pi}{3}$ D. $\frac{\pi}{3}, \frac{2\pi}{3}$ E. none of these	B. $\frac{\pi}{6}, \frac{11\pi}{6}$
98. Solve $\cos^2\theta - 2\cos\theta - 3 = 0$ for $0 \le \theta < 2\pi$ in radians (exact values).	π

99. Solve $4\sin^2\theta - 1 = 0$ for $0 \le \theta < 2\pi$. The sum of the	D. 4π

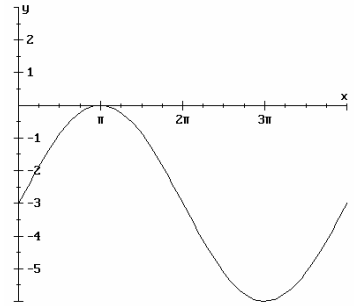
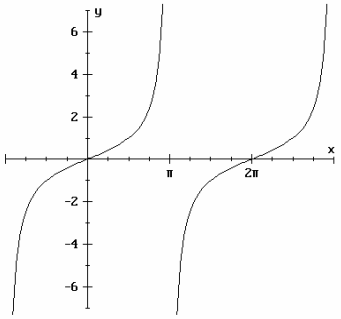
solutions is A. π B. 2π C. 3π D. 4π E. none of these	
100. Solve $\tan^2\theta + \sec\theta = 1$ for $0^\circ \le \theta < 360^\circ$.	$0^\circ, 120^\circ, 240^\circ$
101. Solve $\cos 2\theta = \sin\theta$ for $0^\circ \le \theta < 360^\circ$.	$30^\circ, 150^\circ, 270^\circ$
102. Give the exact values for A. $\text{Arc}\tan 1$ B. $\text{Cos}^{-1}0$ C. $\sin 60^\circ$	A. 45° or $\frac{\pi}{4}$ B. 90° or $\frac{\pi}{2}$ C. $\frac{\sqrt{3}}{2}$
103. Evaluate (in radians) A. $\text{Sin}^{-1}.8310$ B. $\text{Cos}^{-1}.4$ C. $\text{Arc}\cos 2.3$ D. $\text{Arc}\sin\left(-\frac{1}{3}\right)$	A. .9809 B. 1.1593 C. undefined D. -.3398
104. Find the given angle (exact value in radians) from memory. A. $\text{Sin}^{-1}\frac{\sqrt{2}}{2}$ B. $\text{Arc}\cos 0$ C. $\text{Cos}^{-1}\frac{\sqrt{3}}{2}$ D. $\text{Arc}\sin\left(-\frac{1}{2}\right)$	A. $\frac{\pi}{4}$ B. $\frac{\pi}{2}$ C. $\frac{\pi}{6}$ D. $-\frac{\pi}{6}$
105. Find the given angle (in radians) from memory. A. $\text{Cos}^{-1}\left(-\frac{1}{2}\right)$ B. $\text{Arc}\cos(-1)$ C. $\text{Arc}\sin\left(-\frac{\sqrt{3}}{2}\right)$ D. $\text{Sin}^{-1}\frac{\sqrt{3}}{2}$	A. $\frac{2\pi}{3}$ B. π C. $-\frac{\pi}{3}$ D. $\frac{\pi}{3}$
106. Simplify using exact values (in radians). A. $\text{Tan}^{-1}1$	

B. $\text{Cot}^{-1}\left(-\sqrt{3}\right)$ C. $\text{Sec}^{-1}1$ D. $\text{Arc}\csc(-2)$	A. $\frac{\pi}{4}$ B. $\frac{5\pi}{6}$ C. 0 D. $-\frac{\pi}{6}$
107. Give the exact values for A. $\csc\frac{5\pi}{4}$ B. $\cos\left(-210^\circ\right)$ C. $\text{Cot}^{-1}0$	A. $-\sqrt{2}$ B. $-\frac{\sqrt{3}}{2}$ C. 90° or $\frac{\pi}{2}$
108. The inverse tangent is defined in quadrants A. I and II. B. I and IV. C. III and IV. D. I and III. E. none of these.	B. I and IV.
109. What is the measure of the third angle of a triangle whose other angles are 21° and 120°?	39°
110. If x is negative in $\theta = \text{Arc}\cos x$, then θ is in quadrant(s) A. I B. II C. III D. II and III E. none of these	B. II
111. The angle of depression is	the angle between the horizontal and the line of sight.
112. The angle of elevation of the Vehicle Assembly Building at the Kennedy Space Center is 22.8° at 1250 feet from the base of the building. What is the height of this building which is used to house the space shuttle?	525 ft
113. The Law of Cosines can be used if the given information is A. SAA. B. AAA. C. SSS. D. SSA. E. none of these.	C. SSS.

114. The Law of Cosines can be used if the given information is A. AAA. B. ASA. C. SSA. D. SAS. E. none of these.	D. SAS.
115. State the Law of Cosines.	$c^2 = a^2 + b^2 - 2ab\cos C$
116. The Law of Cosines for a correctly labeled triangle states A. $a^2 =$ B. $\cos\beta =$	A. $b^2 + c^2 - 2bc\cos A$ B. $\frac{a^2 + c^2 - b^2}{2ac}$
117. Solve a triangle whose sides are a=25, b=35, and c=50.	$\alpha = 28^\circ$, $\beta = 41^\circ$, $\gamma = 111^\circ$
118. If a=14.6 in., b=28.2 in., and c=19.4 in., find angle β.	111.3°
119. Solve a triangle with sides b=5.2, c=4.9, and angle C=63°.	In $\Delta 1$, a=4.0, A=46°, B=71° In $\Delta 2$, a=.77, A=8°, B=109°
120. If a=41 ft, b=76 ft, and angle B=109°, side c is A. 50 ft. B. 52 ft. C. 54 ft. D. 48 ft. E. none of these.	B. 52 ft.
121. If a=35 cm, b=48 cm, and angle A=46°, how many triangles are formed?	2 triangles
122. If a=28 inches, b=37 inches, and angle A=42°, angle B is A. 118° B. 62° C. 62° and 118° D. 76° E. none of these.	C. 62° and 118°
123. Kristin, in the control tower of an airport, observes Brian in a DC9 plane at a distance of 50 km on a bearing of 100° and Judy in a 747 plane at a distance of 60 km on a bearing of 110°. How far apart are Brian and Judy?	14 km
124. Solve a triangle with angles B=112°, C=35°, and side b=94.	a=55, c=58, A=33°

125. A surveyor needs to measure the distance across a swamp, so two points P and Q are selected at opposite ends of the swamp. From point P the surveyor determines that point Q is in the direction of N47°E. Next, the surveyor measures 100 m in an easterly direction and arrives at a point, call it R. The bearing of point Q from R is N35°W. How far is it across the swamp?	83 m
126. Find the area of a triangle with A=48.6°, c=451, and b=395.	66,800
127. Find the area of a triangle with sides 15, 18, and 25.	130
128. Find the area of a sector of a circle of radius 68 ft subtended by an angle of 19°.	770 ft^2
129. What is the smallest force necessary to keep a 2800 lb car from sliding down a hill that makes an angle of 6.0° with the horizontal? Assume that friction is ignored.	290
130. Simplify: (3-4i)+(-6+i)	-3-3i
131. Simplify: A. (-11+7i)-(8-3i) B. (4+9i)+(-6+3i)	 A. -19+10i B. -2+12i
132. The absolute value of 6-5i is A. 1 B. 36 C. 61 D. $\sqrt{61}$ E. none of these.	D. $\sqrt{61}$
133. Change to trigonometric form: A. -10 B. $-3-3\sqrt{3}i$	 A. 10cis180° B. 6cis240°
134. To change a complex number $r\text{cis}\theta$ to rectangular form use a=_____ and b=_____.	$r\cos\theta$; $r\sin\theta$
135. Change to rectangular form: A. 3cis60° B. $3\left(\cos\frac{7\pi}{6}+i\sin\frac{7\pi}{6}\right)$	 A. $\frac{3}{2}+\frac{3\sqrt{3}}{2}i$ B. $-\frac{3\sqrt{3}}{2}-\frac{3}{2}i$

136. $\frac{(5-5i)(\sqrt{3}-i)}{1-i}$ simplified is A. $5\sqrt{3}-5i$ B. $10(2-i)$ C. $20\text{cis}330^\circ$ D. $5(1-i)^2(\sqrt{3}-i)$ E. none of these.	A. $5\sqrt{3}-5i$
137. $\frac{2\text{cis}128^\circ \cdot 9\text{cis}285^\circ}{(3\text{cis}4^\circ)^3}$ is A. $6\text{cis}409^\circ$ B. $6\text{cis}49^\circ$ C. $6\text{cis}401^\circ$ D. $6\text{cis}41^\circ$ E. none of these.	E. none of these.
138. Compute $(-1+i)^{10}$. Express the answer in rectangular form. A. -32 B. -8i C. -32i D. 8i E. none of these	-32i
139. Find all the third roots of 27i. Leave the answers in trigonometric form.	3cis30°, 3cis150°, 3cis270°
140. Find the linear velocity of a point on the edge of a flywheel of radius 7 meters if the flywheel is rotating 90 times per second.	$1260\pi\frac{\text{meters}}{\text{second}}$
141. $\sin(-\theta)$ is equivalent to A. $\cos(-\theta)$ B. $\cos\theta$ C. $-\sin\theta$ D. all of the above. E. none of these.	C. $-\sin\theta$
142. Two forces of 142 and 215 newtons act on a body at an angle of 112°. Find the magnitude of the resultant force.	209 newtons
143. Fill in the blanks. A. tan18°=_____ 72° B. cos_____° = sin55°	A. cot B. 35°

144. Solve for x: $\sec(5x+3)^\circ = \csc(x-9)^\circ$	16
145. Graph $y = -3 + 3\sin\frac{1}{2}x$ for one period.	
146. Graph $y = \tan\left(\frac{x}{2}+\pi\right)$ over a two-period interval.	
147. Graph $y = 2\csc\left(x-\frac{\pi}{2}\right)+1$ for one period.