Trig/Pre-Calculus Name_____

Final Exam Review (Trig)

Date_____ Period____

Use the angle sum identity to find the exact value of each.

1) $\sin 165°$

2) $\cos 255°$

Use the angle difference identity to find the exact value of each.

3) $\cos -75°$

4) $\cos 105°$

Use the angle sum identity to find the exact value of each.

5) $\sin \frac{17\pi}{12}$

6) $\sin \frac{13\pi}{12}$

Use the angle difference identity to find the exact value of each.

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

8) $\cos \frac{\pi}{12}$

Use a double-angle identity to find the exact value of each expression.

9) $\tan \theta = -\frac{3}{4}$ and $90° < \theta < 180°$

Find $\sec 2\theta$

10) $\csc \theta = -\frac{\sqrt{34}}{5}$ and $270° < \theta < 360°$

Find $\sin 2\theta$

11) $\cot \theta = \frac{4}{3}$ and $180° < \theta < 270°$

Find $\cot 2\theta$

12) $\csc \theta = \frac{\sqrt{357}}{17}$ and $90° < \theta < 180°$

Find $\cos 2\theta$

13) $\sec \theta = \frac{13}{12}$ and $270° < \theta < 360°$

Find $\sin 2\theta$

14) $\sec \theta = \frac{5}{4}$ and $270° < \theta < 360°$

Find $\csc 2\theta$

15) $\cos \theta = -\frac{\sqrt{10}}{10}$ and $180° < \theta < 270°$

Find $\csc 2\theta$

16) $\sin \theta = -\frac{3}{5}$ and $180° < \theta < 270°$

Find $\cos 2\theta$

17) $\sec \theta = \frac{5}{3}$ and $\frac{3\pi}{2} < \theta < 2\pi$

Find $\sin 2\theta$

18) $\cos \theta = -\frac{4}{5}$ and $\frac{\pi}{2} < \theta < \pi$

Find $\sin 2\theta$

19) $\tan \theta = \frac{5}{12}$ and $0 < \theta < \frac{\pi}{2}$

Find $\cot 2\theta$

20) $\sec \theta = -\frac{5}{4}$ and $\pi < \theta < \frac{3\pi}{2}$

Find $\tan 2\theta$

21) $\sin \theta = -\frac{3}{5}$ and $\frac{3\pi}{2} < \theta < 2\pi$

Find $\cos 2\theta$

22) $\tan \theta = -\frac{7}{24}$ and $\frac{\pi}{2} < \theta < \pi$

Find $\tan 2\theta$

23) $\cos \theta = -\frac{1}{3}$ and $\pi < \theta < \frac{3\pi}{2}$

Find $\csc 2\theta$

24) $\sin \theta = \frac{5}{13}$ and $\frac{\pi}{2} < \theta < \pi$

Find $\csc 2\theta$

Use a half-angle identity to find the exact value of each expression.

25) $\sin\theta = -\frac{\sqrt{5}}{3}$ and $180° < \theta < 270°$

Find $\sec\frac{\theta}{2}$

26) $\cot\theta = \frac{4}{3}$ and $0° < \theta < 90°$

Find $\tan\frac{\theta}{2}$

27) $\tan\theta = \frac{3}{4}$ and $180° < \theta < 270°$

Find $\csc\frac{\theta}{2}$

28) $\cot\theta = -\frac{1}{2}$ and $90° < \theta < 180°$

Find $\cos\frac{\theta}{2}$

29) $\sec\theta = -\frac{5}{4}$ and $90° < \theta < 180°$

Find $\cot\frac{\theta}{2}$

30) $\cos\theta = \frac{24}{25}$ and $270° < \theta < 360°$

Find $\sin\frac{\theta}{2}$

31) $\tan \theta = \frac{3}{4}$ and $0° < \theta < 90°$

Find $\tan \frac{\theta}{2}$

32) $\sec \theta = -\sqrt{2}$ and $180° < \theta < 270°$

Find $\csc \frac{\theta}{2}$

33) $\sin \theta = \frac{5\sqrt{34}}{34}$ and $0 < \theta < \frac{\pi}{2}$

Find $\sin \frac{\theta}{2}$

34) $\tan \theta = 4\sqrt{5}$ and $\pi < \theta < \frac{3\pi}{2}$

Find $\sec \frac{\theta}{2}$

35) $\sin \theta = \frac{1}{3}$ and $\frac{\pi}{2} < \theta < \pi$

Find $\cos \frac{\theta}{2}$

36) $\cos \theta = \frac{24}{25}$ and $\frac{3\pi}{2} < \theta < 2\pi$

Find $\csc \frac{\theta}{2}$

37) $\csc \theta = \frac{5}{3}$ and $\frac{\pi}{2} < \theta < \pi$

Find $\sec \frac{\theta}{2}$

38) $\cot \theta = \frac{12}{5}$ and $0 < \theta < \frac{\pi}{2}$

Find $\cot \frac{\theta}{2}$

39) $\sec \theta = \frac{\sqrt{5}}{2}$ and $\frac{3\pi}{2} < \theta < 2\pi$

Find $\sin \frac{\theta}{2}$

40) $\csc \theta = -\frac{5}{3}$ and $\pi < \theta < \frac{3\pi}{2}$

Find $\cos \frac{\theta}{2}$

Use a double-angle identity to find the exact value of each expression.

41) $\tan \theta = \frac{7}{24}$ and $0° < \theta < 90°$

Find $\sin 2\theta$

42) $\cot \theta = \frac{\sqrt{21}}{2}$ and $\pi < \theta < \frac{3\pi}{2}$

Find $\sin 2\theta$

43) $\sin\theta = -\frac{1}{4}$ and $270° < \theta < 360°$

Find $\cos 2\theta$

44) $\tan\theta = \frac{3}{4}$ and $0 < \theta < \frac{\pi}{2}$

Find $\cos 2\theta$

45) $\sec\theta = \frac{5}{4}$ and $0° < \theta < 90°$

Find $\tan 2\theta$

46) $\tan\theta = \frac{3}{4}$ and $0 < \theta < \frac{\pi}{2}$

Find $\tan 2\theta$

47) $\csc\theta = \frac{17}{8}$ and $90° < \theta < 180°$

Find $\csc 2\theta$

48) $\sec\theta = -\frac{\sqrt{26}}{5}$ and $\pi < \theta < \frac{3\pi}{2}$

Find $\csc 2\theta$

49) $\csc\theta = -\frac{\sqrt{5}}{2}$ and $180° < \theta < 270°$

Find $\sec 2\theta$

50) $\csc\theta = -\frac{5}{3}$ and $\frac{3\pi}{2} < \theta < 2\pi$

Find $\sec 2\theta$

51) $\cot\theta = -\frac{4}{3}$ and $270° < \theta < 360°$

Find $\cot 2\theta$

52) $\sec\theta = \frac{5}{4}$ and $0 < \theta < \frac{\pi}{2}$

Find $\cot 2\theta$

Use a half-angle identity to find the exact value of each expression.

53) $\cos\theta = \frac{4}{5}$ and $0° < \theta < 90°$

Find $\sin\frac{\theta}{2}$

54) $\sin\theta = \frac{3}{5}$ and $\frac{\pi}{2} < \theta < \pi$

Find $\sin\frac{\theta}{2}$

55) $\csc \theta = \frac{5}{3}$ and $90° < \theta < 180°$

Find $\cos \frac{\theta}{2}$

56) $\cot \theta = -\frac{12}{5}$ and $\frac{3\pi}{2} < \theta < 2\pi$

Find $\cos \frac{\theta}{2}$

57) $\tan \theta = \frac{3}{4}$ and $0° < \theta < 90°$

Find $\tan \frac{\theta}{2}$

58) $\tan \theta = -\frac{3}{4}$ and $\frac{\pi}{2} < \theta < \pi$

Find $\tan \frac{\theta}{2}$

59) $\sec \theta = \frac{17}{15}$ and $270° < \theta < 360°$

Find $\csc \frac{\theta}{2}$

60) $\cot \theta = \frac{\sqrt{3}}{3}$ and $0 < \theta < \frac{\pi}{2}$

Find $\csc \frac{\theta}{2}$

61) $\csc \theta = \frac{13}{5}$ and $90° < \theta < 180°$

Find $\sec \frac{\theta}{2}$

62) $\sec \theta = -\frac{11\sqrt{6}}{24}$ and $\pi < \theta < \frac{3\pi}{2}$

Find $\sec \frac{\theta}{2}$

63) $\tan \theta = \frac{\sqrt{39}}{5}$ and $0° < \theta < 90°$

Find $\cot \frac{\theta}{2}$

64) $\tan \theta = \frac{5}{12}$ and $\pi < \theta < \frac{3\pi}{2}$

Find $\cot \frac{\theta}{2}$

Solve each equation for $0 \leq \theta < 2\pi$.

65) $\frac{\sqrt{3}}{2} = \sin \theta$

66) $\sin \theta = 0$

67) $4 = -8\sin\theta$

68) $-\frac{1}{2} \cdot \sin\theta = -\frac{1}{2}$

69) $4 + 2\sin\theta = 4$

70) $-4 - \frac{1}{4} \cdot \sin\theta = -4$

71) $-\frac{\sqrt{3}}{2} = \cos\theta$

72) $-1 = \cos\theta$

73) $\frac{-4+\sqrt{3}}{2} = -2 + \cos\ \theta$

74) $4\cos\ \theta = -2\sqrt{3}$

75) $\frac{2+\sqrt{2}}{2} = 1 + \cos\ \theta$

76) $-3 = -4 + \cos\ \theta$

77) $\tan\ \theta = \frac{\sqrt{3}}{3}$

78) $1 = \tan\ \theta$

79) $-4\tan\ \theta = 4$

80) $-1+\frac{1}{3}\cdot\tan\theta=-\frac{4}{3}$

81) $\csc\theta=\sqrt{2}$

82) $\frac{1}{5}\cdot\csc\theta=-\frac{\sqrt{2}}{5}$

83) $-1+\frac{3}{4}\cdot\csc\theta=\frac{-2-\sqrt{3}}{2}$

84) $\sec\theta=-\sqrt{2}$

85) $4\sec\theta=-4\sqrt{2}$

86) $4+\frac{1}{5}\cdot\sec\theta=\frac{22}{5}$

87) $\frac{\sqrt{3}}{3}=\cot\theta$

88) $-5 + \cot\theta = \dfrac{-15 - \sqrt{3}}{3}$

89) $3 = 3 - 3\cot\theta$

Convert each degree measure into radians.

90) 45°

91) 25°

92) -680°

Convert each radian measure into degrees.

93) $-\frac{181\pi}{36}$

94) $-\frac{5\pi}{4}$

95) $\frac{19\pi}{36}$

Answers to Final Exam Review (Trig) (ID: 1)

1) $\frac{\sqrt{6}-\sqrt{2}}{4}$
2) $\frac{\sqrt{2}-\sqrt{6}}{4}$
3) $\frac{\sqrt{6}-\sqrt{2}}{4}$
4) $\frac{\sqrt{2}-\sqrt{6}}{4}$
5) $\frac{-\sqrt{6}-\sqrt{2}}{4}$
6) $\frac{\sqrt{2}-\sqrt{6}}{4}$
7) $\frac{\sqrt{2}-\sqrt{6}}{4}$
8) $\frac{\sqrt{6}+\sqrt{2}}{4}$
9) $\frac{25}{7}$
10) $-\frac{15}{17}$
11) $\frac{7}{24}$
12) $-\frac{13}{21}$
13) $-\frac{120}{169}$
14) $-\frac{25}{24}$
15) $\frac{5}{3}$
16) $\frac{7}{25}$
17) $-\frac{24}{25}$
18) $-\frac{24}{25}$
19) $\frac{119}{120}$
20) $\frac{24}{7}$
21) $\frac{7}{25}$
22) $-\frac{336}{527}$
23) $\frac{9\sqrt{2}}{8}$
24) $-\frac{169}{120}$
25) $\sqrt{6}$
26) $\frac{1}{3}$
27) $\frac{\sqrt{10}}{3}$
28) $\frac{\sqrt{50-10\sqrt{5}}}{10}$
29) $\frac{1}{3}$
30) $\frac{\sqrt{2}}{10}$
31) $\frac{1}{3}$
32) $\sqrt{4-2\sqrt{2}}$
33) $\frac{\sqrt{578-51\sqrt{34}}}{34}$
34) $\frac{3}{2}$
35) $\frac{\sqrt{18-12\sqrt{2}}}{6}$
36) $5\sqrt{2}$
37) $\sqrt{10}$
38) 5
39) $\frac{\sqrt{50-20\sqrt{5}}}{10}$
40) $-\frac{\sqrt{10}}{10}$
41) $\frac{336}{625}$
42) $\frac{4\sqrt{21}}{25}$
43) $\frac{7}{8}$
44) $\frac{7}{25}$
45) $\frac{24}{7}$
46) $\frac{24}{7}$
47) $-\frac{289}{240}$
48) $\frac{13}{5}$
49) $-\frac{5}{3}$
50) $\frac{25}{7}$
51) $-\frac{7}{24}$
52) $\frac{7}{24}$
53) $\frac{\sqrt{10}}{10}$
54) $\frac{3\sqrt{10}}{10}$
55) $\frac{\sqrt{10}}{10}$
56) $-\frac{5\sqrt{26}}{26}$
57) $\frac{1}{3}$
58) 3
59) $\sqrt{17}$
60) 2
61) $\sqrt{26}$
62) $-\frac{\sqrt{242+88\sqrt{6}}}{5}$
63) $\frac{\sqrt{39}}{3}$
64) $-\frac{1}{5}$
65) $\left\{\frac{\pi}{3}, \frac{2\pi}{3}\right\}$
66) $\{0, \pi\}$
67) $\left\{\frac{7\pi}{6}, \frac{11\pi}{6}\right\}$
68) $\left\{\frac{\pi}{2}\right\}$
69) $\{0, \pi\}$
70) $\{0, \pi\}$
71) $\left\{\frac{5\pi}{6}, \frac{7\pi}{6}\right\}$
72) $\{\pi\}$
73) $\left\{\frac{\pi}{6}, \frac{11\pi}{6}\right\}$
74) $\left\{\frac{5\pi}{6}, \frac{7\pi}{6}\right\}$
75) $\left\{\frac{\pi}{4}, \frac{7\pi}{4}\right\}$
76) $\{0\}$
77) $\left\{\frac{\pi}{6}, \frac{7\pi}{6}\right\}$
78) $\left\{\frac{\pi}{4}, \frac{5\pi}{4}\right\}$
79) $\left\{\frac{3\pi}{4}, \frac{7\pi}{4}\right\}$
80) $\left\{\frac{3\pi}{4}, \frac{7\pi}{4}\right\}$

81) $\left\{\frac{\pi}{4}, \frac{3\pi}{4}\right\}$

82) $\left\{\frac{5\pi}{4}, \frac{7\pi}{4}\right\}$

83) $\left\{\frac{4\pi}{3}, \frac{5\pi}{3}\right\}$

84) $\left\{\frac{3\pi}{4}, \frac{5\pi}{4}\right\}$

85) $\left\{\frac{3\pi}{4}, \frac{5\pi}{4}\right\}$

86) $\left\{\frac{\pi}{3}, \frac{5\pi}{3}\right\}$

87) $\left\{\frac{\pi}{3}, \frac{4\pi}{3}\right\}$

88) $\left\{\frac{2\pi}{3}, \frac{5\pi}{3}\right\}$

89) $\left\{\frac{\pi}{2}, \frac{3\pi}{2}\right\}$

90) $\frac{\pi}{4}$

91) $\frac{5\pi}{36}$

92) $-\frac{34\pi}{9}$

93) -905°

94) -225°

95) 95°