

Do **ALL** work on a separate sheet of paper, show all steps required to solve the problem. Answers on back.

21. $\sin^2 x = 3\cos^2 x$

22. $\tan 3x (\tan x - 1) = 0$

23. $(3\tan^2 x - 1)(\tan^2 x - 3) = 0$

24. $\cos 2x(2\cos x + 1) = 0$

25. $\cos^3 x = \cos x$

27. $3 \tan^3 x = \tan x$

28. $2 \sin^2 x = 2 + \cos x$

31. $2 \sin x + \csc x = 0$

32. $\sin 2x = -\frac{\sqrt{3}}{2}$

33. $\csc x + \cot x = 1$

34. $\tan 3x = 1$

36. $\sec 4x = 2$

37. $\frac{1+\cos x}{1-\cos x} = 0$

38. $2\sin^2 x + 3 \sin x + 1 = 0$

39. $2\sec^2 x + \tan^2 x - 3 = 0$

40. $\cos x + \sin x \tan x = 2$

Purple book -- Page 478 - answers:

21. $\frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$

22. $0, \frac{\pi}{4}, \frac{\pi}{3}, \frac{2\pi}{3}, \pi, \frac{5\pi}{4}, \frac{4\pi}{3}, \frac{5\pi}{3}$

23. $\frac{\pi}{6}, \frac{\pi}{3}, \frac{2\pi}{3}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{4\pi}{3}, \frac{5\pi}{3}, \frac{11\pi}{6}$

24. $\frac{2\pi}{3}, \frac{4\pi}{3}, \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$

25. $0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}$

27. $0, \frac{\pi}{6}, \frac{5\pi}{6}, \pi, \frac{7\pi}{6}, \frac{11\pi}{6}$

28. $\frac{\pi}{2}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{3\pi}{2}$

31. no solution

32. $\frac{2\pi}{3}, \frac{5\pi}{6}, \frac{5\pi}{3}, \frac{11\pi}{6}$

33. $\frac{\pi}{2}, \frac{3\pi}{2}$

34. $\frac{\pi}{12}, \frac{5\pi}{12}, \frac{13\pi}{12}, \frac{17\pi}{12}, \frac{3\pi}{4}, \frac{7\pi}{4}$

36. $\frac{\pi}{12}, \frac{5\pi}{12}, \frac{7\pi}{12}, \frac{11\pi}{12}, \frac{13\pi}{12}, \frac{17\pi}{12}, \frac{19\pi}{12}, \frac{23\pi}{12}$

37. π

38. $\frac{3\pi}{2}, \frac{7\pi}{6}, \frac{11\pi}{6}$

39. $\frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$

40. $\frac{\pi}{3}, \frac{5\pi}{3}$