PreCalculus

WS: 5.3 Extra Practice ANSWER KEY

General Solution	List of all solutions on interval [0, 2π)
1. $x=\frac{5\pi}{6}+n\pi$	$\left\{\frac{5\pi}{6},\frac{11\pi}{6}\right\}$
2. $x=\frac{\pi}{3}+2n\pi,\frac{5\pi}{3}+2n\pi$	$\left\{\frac{\pi}{3},\frac{5\pi}{3}\right\}$
3. $x=\frac{\pi}{6}+n\pi$	$\left\{\frac{\pi}{6},\frac{7\pi}{6}\right\}$
4. $x=\frac{\pi}{6}+2n\pi,\frac{11\pi}{6}+2n\pi$	$\left\{\frac{\pi}{6},\frac{11\pi}{6}\right\}$
5. $x=\frac{\pi}{4}+2n\pi,\frac{7\pi}{4}+2n\pi$	$\left\{\frac{\pi}{4},\frac{7\pi}{4}\right\}$
6. $x=\frac{2\pi}{3}+2n\pi,\frac{4\pi}{3}+2n\pi$	$\left\{\frac{2\pi}{3},\frac{4\pi}{3}\right\}$
7. $x=\frac{\pi}{3}+2n\pi,\frac{5\pi}{3}+2n\pi$	$\left\{\frac{\pi}{3},\frac{5\pi}{3}\right\}$
8. $x=\frac{\pi}{3}+2n\pi,\frac{5\pi}{3}+2n\pi$	$\left\{\frac{\pi}{3},\frac{5\pi}{3}\right\}$
9. $x=2n\pi,\pi+2n\pi$	$\{0,\pi\}$
10. $x=\frac{\pi}{3}+2n\pi,\frac{2\pi}{3}+2n\pi,\frac{4\pi}{3}+2n\pi,\frac{5\pi}{3}+2n\pi$	$\left\{\frac{\pi}{3},\frac{2\pi}{3},\frac{4\pi}{3},\frac{5\pi}{3}\right\}$
11. $x=\frac{\pi}{4}+2n\pi,\frac{3\pi}{4}+2n\pi,\frac{5\pi}{4}+2n\pi,\frac{7\pi}{4}+2n\pi$	$\left\{\frac{\pi}{4},\frac{3\pi}{4},\frac{5\pi}{4},\frac{7\pi}{4}\right\}$
12. $x=\frac{\pi}{3}+n\pi,\frac{2\pi}{3}+n\pi$	$\left\{\frac{\pi}{3},\frac{2\pi}{3},\frac{4\pi}{3},\frac{5\pi}{3}\right\}$
13. $x=\frac{\pi}{6}+2n\pi,\frac{5\pi}{6}+2n\pi,\frac{7\pi}{6}+2n\pi,\frac{11\pi}{6}+2n\pi$	$\left\{\frac{\pi}{6},\frac{5\pi}{6},\frac{7\pi}{6},\frac{11\pi}{6}\right\}$
14. $x=\frac{\pi}{2}+2n\pi$	$\left\{\frac{\pi}{2}\right\}$
15. $x=\frac{3\pi}{4}+n\pi$	$\left\{\frac{3\pi}{4},\frac{7\pi}{4}\right\}$
16. $x=\frac{\pi}{2}+2n\pi,\frac{3\pi}{2}+2n\pi$	$\left\{\frac{\pi}{2},\frac{3\pi}{2}\right\}$
17. $x=2n\pi,\pi+2n\pi,\frac{\pi}{3}+2n\pi,\frac{5\pi}{3}+2n\pi$	$\left\{0,\pi,\frac{\pi}{3},\frac{5\pi}{3}\right\}$
18. $x=\frac{\pi}{2}+2n\pi,\frac{3\pi}{2}+2n\pi,\frac{\pi}{6}+2n\pi,\frac{11\pi}{6}+2n\pi$	$\left\{\frac{\pi}{2},\frac{3\pi}{2},\frac{\pi}{6},\frac{11\pi}{6}\right\}$

19. $x=\frac{\pi}{3}+2n\pi,\frac{5\pi}{3}+2n\pi$	$\left\{\frac{\pi}{3},\frac{5\pi}{3}\right\}$
20. $x=\frac{\pi}{3}+2n\pi,\frac{2\pi}{3}+2n\pi,\frac{4\pi}{3}+2n\pi,\frac{5\pi}{3}+2n\pi$	$\left\{\frac{\pi}{3},\frac{2\pi}{3},\frac{4\pi}{3},\frac{5\pi}{3}\right\}$
21. $x=\pi+4n\pi$	$\{\pi\}$
22. $x=\frac{3\pi}{16}+\frac{n\pi}{4}$	$\left\{\frac{3\pi}{16},\frac{7\pi}{16},\frac{11\pi}{16},\frac{15\pi}{16},\frac{19\pi}{16},\frac{23\pi}{16},\frac{27\pi}{16},\frac{31\pi}{16}\right\}$
23. $x=\frac{\pi}{9}+\frac{n\pi}{3},\frac{2\pi}{9}+\frac{n\pi}{3}$	$\left\{\frac{\pi}{9},\frac{4\pi}{9},\frac{7\pi}{9},\frac{10\pi}{9},\frac{13\pi}{9},\frac{16\pi}{9},\frac{2\pi}{9},\frac{5\pi}{9},\frac{8\pi}{9},\frac{11\pi}{9},\frac{14\pi}{9},\frac{17\pi}{9}\right.$
24. $x=\frac{\pi}{18}+\frac{2n\pi}{3},\frac{11\pi}{18}+\frac{2n\pi}{3}$	$\left\{\frac{\pi}{18},\frac{13\pi}{18},\frac{25\pi}{18},\frac{11\pi}{18},\frac{23\pi}{18},\frac{35\pi}{18}\right\}$
25. $x=\frac{\pi}{8}+n\pi,\frac{3\pi}{8}+n\pi$	$\left\{\frac{\pi}{8},\frac{9\pi}{8},\frac{3\pi}{8},\frac{11\pi}{8}\right\}$
26. $x=\frac{\pi}{12}+\frac{n\pi}{2},\frac{5\pi}{12}+\frac{n\pi}{2}$	$\left\{\frac{\pi}{12},\frac{7\pi}{12},\frac{13\pi}{12},\frac{19\pi}{12},\frac{5\pi}{12},\frac{11\pi}{12},\frac{17\pi}{12},\frac{23\pi}{12}\right\}$
27. $x=\frac{\pi}{8}+n\pi,\frac{3\pi}{8}+n\pi,\frac{5\pi}{8}+n\pi,\frac{7\pi}{8}+n\pi$	$\left\{\frac{\pi}{8},\frac{9\pi}{8},\frac{3\pi}{8},\frac{11\pi}{8},\frac{5\pi}{8},\frac{13\pi}{8},\frac{7\pi}{8},\frac{15\pi}{8}\right\}$
28. $x=n\pi,\frac{\pi}{4}+n\pi$	$\left\{0,\pi,\frac{\pi}{4},\frac{5\pi}{4}\right\}$
29. $x=2n\pi,\pi+2n\pi,\frac{\pi}{2}+2n\pi$	$\left\{0,\pi,\frac{\pi}{2}\right\}$
30. $x=\frac{\pi}{6}+2n\pi,\frac{5\pi}{6}+2n\pi,\frac{3\pi}{2}+2n\pi$	$\left\{\frac{\pi}{6},\frac{5\pi}{6},\frac{3\pi}{2}\right\}$
31. $x=\frac{\pi}{6}+2n\pi,\frac{5\pi}{6}+2n\pi,\frac{7\pi}{6}+2n\pi,\frac{11\pi}{6}+2n\pi$	$\left\{\frac{\pi}{6},\frac{5\pi}{6},\frac{7\pi}{6},\frac{11\pi}{6}\right\}$
32. $x=1.816+n\pi,1.249+n\pi$	$\{1.816,4.957,1.249,4.391\}$
33. $x=0.381+n\pi,2.034+n\pi$	$\{0.381,3.522,2.034,5.176\}$
34. $x=0.464+n\pi,1.893+n\pi$	$\{0.464,3.605,1.893,5.034\}$
35. $x=1.231+2n\pi,5.052+2n\pi,2.301+2n\pi,3.983+2n\pi$	$\{1.231,5.052,2.301,3.983\}$
36. $x=1.998+2n\pi,4.285+2n\pi$	$\{1.998,4.285\}$
37. $x=1.110+2n\pi,2.032+2n\pi$	$\{1.110,2.032\}$

38. $x = 0.870 + n\pi, 2.107 + n\pi$	$\{0.870, 4.012, 2.107, 5.249\}$
39. $x = 0.848 + 2n\pi, 2.294 + 2n\pi, 0.340 + 2n\pi, 2.802 + 2n\pi$	$\{0.848, 2.294, 0.340, 2.802\}$
40. $x = 0.375 + 2n\pi, 2.767 + 2n\pi$	$\{0.375, 2.767\}$
41. $x = 0.534 + n\pi, 1.988 + n\pi$	$\{0.534, 3.676, 1.988, 5.130\}$
42. $x = 1.998 + 2n\pi, 4.285 + 2n\pi$	$\{1.998, 4.285\}$
43. $x = 0.870 + n\pi, 2.107 + n\pi$	$\{0.870, 4.012, 2.107, 5.249\}$