

Worksheet 18 KEY - Inverse Trigonometric Functions (§7.4)

1. $\arcsin(-1) = -\frac{\pi}{2}$

2. $\arcsin\left(-\frac{\sqrt{3}}{2}\right) = -\frac{\pi}{3}$

3. $\arcsin\left(-\frac{\sqrt{2}}{2}\right) = -\frac{\pi}{4}$

4. $\arcsin\left(-\frac{1}{2}\right) = -\frac{\pi}{6}$

5. $\arcsin(0) = 0$

6. $\arcsin\left(\frac{1}{2}\right) = \frac{\pi}{6}$

7. $\arcsin\left(\frac{\sqrt{2}}{2}\right) = \frac{\pi}{4}$

8. $\arcsin\left(\frac{\sqrt{3}}{2}\right) = \frac{\pi}{3}$

9. $\arcsin(1) = \frac{\pi}{2}$

10. $\arccos(-1) = \pi$

11. $\arccos\left(-\frac{\sqrt{3}}{2}\right) = \frac{5\pi}{6}$

12. $\arccos\left(-\frac{\sqrt{2}}{2}\right) = \frac{3\pi}{4}$

13. $\arccos\left(-\frac{1}{2}\right) = \frac{2\pi}{3}$

14. $\arccos(0) = \frac{\pi}{2}$

15. $\arccos\left(\frac{1}{2}\right) = \frac{\pi}{3}$

16. $\arccos\left(\frac{\sqrt{2}}{2}\right) = \frac{\pi}{4}$

17. $\arccos\left(\frac{\sqrt{3}}{2}\right) = \frac{\pi}{6}$

18. $\arccos(1) = 0$

19. $\arctan(-\sqrt{3}) = -\frac{\pi}{3}$

20. $\arctan(-1) = -\frac{\pi}{4}$

21. $\arctan\left(-\frac{\sqrt{3}}{3}\right) = -\frac{\pi}{6}$

22. $\arctan(0) = 0$

23. $\arctan\left(\frac{\sqrt{3}}{3}\right) = \frac{\pi}{6}$

24. $\arctan(1) = \frac{\pi}{4}$

25. $\arctan(\sqrt{3}) = \frac{\pi}{3}$

26. $\text{arccot}(-\sqrt{3}) = \frac{5\pi}{6}$

27. $\text{arccot}(-1) = \frac{3\pi}{4}$

28. $\text{arccot}\left(-\frac{\sqrt{3}}{3}\right) = \frac{2\pi}{3}$

29. $\text{arccot}(0) = \frac{\pi}{2}$

30. $\text{arccot}\left(\frac{\sqrt{3}}{3}\right) = \frac{\pi}{3}$

31. $\text{arccot}(1) = \frac{\pi}{4}$

32. $\text{arccot}(\sqrt{3}) = \frac{\pi}{6}$

33. $\text{arcsec}(2) = \frac{\pi}{3}$

34. $\text{arccsc}(2) = \frac{\pi}{6}$

35. $\text{arcsec}(\sqrt{2}) = \frac{\pi}{4}$

36. $\text{arccsc}(\sqrt{2}) = \frac{\pi}{4}$

37. $\text{arcsec}\left(\frac{2\sqrt{3}}{3}\right) = \frac{\pi}{6}$

38. $\text{arccsc}\left(\frac{2\sqrt{3}}{3}\right) = \frac{\pi}{3}$

39. $\text{arcsec}(1) = 0$

40. $\text{arccsc}(1) = \frac{\pi}{2}$

41. $\text{arcsec}(-2) = \frac{4\pi}{3}$

42. $\text{arcsec}(-\sqrt{2}) = \frac{5\pi}{4}$

43. $\operatorname{arcsec}\left(-\frac{2\sqrt{3}}{3}\right) = \frac{7\pi}{6}$

44. $\operatorname{arcsec}(-1) = \pi$

45. $\operatorname{arccsc}(-2) = \frac{7\pi}{6}$

46. $\operatorname{arccsc}(-\sqrt{2}) = \frac{5\pi}{4}$

47. $\operatorname{arccsc}\left(-\frac{2\sqrt{3}}{3}\right) = \frac{4\pi}{3}$

48. $\operatorname{arccsc}(-1) = \frac{3\pi}{2}$

49. $\operatorname{arcsec}(-2) = \frac{2\pi}{3}$

50. $\operatorname{arcsec}(-\sqrt{2}) = \frac{3\pi}{4}$

51. $\operatorname{arcsec}\left(-\frac{2\sqrt{3}}{3}\right) = \frac{5\pi}{6}$

52. $\operatorname{arcsec}(-1) = \pi$

53. $\operatorname{arccsc}(-2) = -\frac{\pi}{6}$

54. $\operatorname{arccsc}(-\sqrt{2}) = -\frac{\pi}{4}$

55. $\operatorname{arccsc}\left(-\frac{2\sqrt{3}}{3}\right) = -\frac{\pi}{3}$

56. $\operatorname{arccsc}(-1) = -\frac{\pi}{2}$

57. $\sin\left(\arcsin\left(\frac{1}{2}\right)\right) = \frac{1}{2}$

58. $\sin\left(\arcsin\left(-\frac{\sqrt{2}}{2}\right)\right) = -\frac{\sqrt{2}}{2}$

59. $\sin\left(\arcsin\left(\frac{3}{5}\right)\right) = \frac{3}{5}$

60. $\sin(\arcsin(-0.42)) = -0.42$

61. $\sin\left(\arcsin\left(\frac{5}{4}\right)\right)$ is undefined.

62. $\cos\left(\arccos\left(\frac{\sqrt{2}}{2}\right)\right) = \frac{\sqrt{2}}{2}$

63. $\cos\left(\arccos\left(-\frac{1}{2}\right)\right) = -\frac{1}{2}$

64. $\cos\left(\arccos\left(\frac{5}{13}\right)\right) = \frac{5}{13}$

65. $\cos(\arccos(-0.998)) = -0.998$

66. $\cos(\arccos(\pi))$ is undefined.

67. $\tan(\arctan(-1)) = -1$

68. $\tan(\arctan(\sqrt{3})) = \sqrt{3}$

69. $\tan\left(\arctan\left(\frac{5}{12}\right)\right) = \frac{5}{12}$

70. $\tan(\arctan(0.965)) = 0.965$

71. $\tan(\arctan(3\pi)) = 3\pi$

72. $\cot(\operatorname{arccot}(1)) = 1$

73. $\cot(\operatorname{arccot}(-\sqrt{3})) = -\sqrt{3}$

74. $\cot\left(\operatorname{arccot}\left(-\frac{7}{24}\right)\right) = -\frac{7}{24}$

75. $\cot(\operatorname{arccot}(-0.001)) = -0.001$

76. $\cot\left(\operatorname{arccot}\left(\frac{17\pi}{4}\right)\right) = \frac{17\pi}{4}$

77. $\sec(\operatorname{arcsec}(2)) = 2$

78. $\sec(\operatorname{arcsec}(-1)) = -1$

79. $\sec\left(\operatorname{arcsec}\left(\frac{1}{2}\right)\right)$ is undefined.
81. $\sec(\operatorname{arcsec}(117\pi)) = 117\pi$
83. $\csc\left(\operatorname{arccsc}\left(-\frac{2\sqrt{3}}{3}\right)\right) = -\frac{2\sqrt{3}}{3}$
85. $\csc(\operatorname{arccsc}(1.0001)) = 1.0001$
87. $\arcsin\left(\sin\left(\frac{\pi}{6}\right)\right) = \frac{\pi}{6}$
89. $\arcsin\left(\sin\left(\frac{3\pi}{4}\right)\right) = \frac{\pi}{4}$
91. $\arcsin\left(\sin\left(\frac{4\pi}{3}\right)\right) = -\frac{\pi}{3}$
93. $\arccos\left(\cos\left(\frac{2\pi}{3}\right)\right) = \frac{2\pi}{3}$
95. $\arccos\left(\cos\left(-\frac{\pi}{6}\right)\right) = \frac{\pi}{6}$
97. $\arctan\left(\tan\left(\frac{\pi}{3}\right)\right) = \frac{\pi}{3}$
99. $\arctan(\tan(\pi)) = 0$
101. $\arctan\left(\tan\left(\frac{2\pi}{3}\right)\right) = -\frac{\pi}{3}$
103. $\operatorname{arccot}\left(\cot\left(-\frac{\pi}{4}\right)\right) = \frac{3\pi}{4}$
105. $\operatorname{arccot}\left(\cot\left(\frac{3\pi}{2}\right)\right) = \frac{\pi}{2}$
107. $\operatorname{arcsec}\left(\sec\left(\frac{\pi}{4}\right)\right) = \frac{\pi}{4}$
109. $\operatorname{arcsec}\left(\sec\left(\frac{5\pi}{6}\right)\right) = \frac{7\pi}{6}$
111. $\operatorname{arcsec}\left(\sec\left(\frac{5\pi}{3}\right)\right) = \frac{\pi}{3}$
80. $\sec(\operatorname{arcsec}(0.75))$ is undefined.
82. $\csc(\operatorname{arccsc}(\sqrt{2})) = \sqrt{2}$
84. $\csc\left(\operatorname{arccsc}\left(\frac{\sqrt{2}}{2}\right)\right)$ is undefined.
86. $\csc\left(\operatorname{arccsc}\left(\frac{\pi}{4}\right)\right)$ is undefined.
88. $\arcsin\left(\sin\left(-\frac{\pi}{3}\right)\right) = -\frac{\pi}{3}$
90. $\arcsin\left(\sin\left(\frac{11\pi}{6}\right)\right) = -\frac{\pi}{6}$
92. $\arccos\left(\cos\left(\frac{\pi}{4}\right)\right) = \frac{\pi}{4}$
94. $\arccos\left(\cos\left(\frac{3\pi}{2}\right)\right) = \frac{\pi}{2}$
96. $\arccos\left(\cos\left(\frac{5\pi}{4}\right)\right) = \frac{3\pi}{4}$
98. $\arctan\left(\tan\left(-\frac{\pi}{4}\right)\right) = -\frac{\pi}{4}$
100. $\arctan\left(\tan\left(\frac{\pi}{2}\right)\right)$ is undefined
102. $\operatorname{arccot}\left(\cot\left(\frac{\pi}{3}\right)\right) = \frac{\pi}{3}$
104. $\operatorname{arccot}(\cot(\pi))$ is undefined
106. $\operatorname{arccot}\left(\cot\left(\frac{2\pi}{3}\right)\right) = \frac{2\pi}{3}$
108. $\operatorname{arcsec}\left(\sec\left(\frac{4\pi}{3}\right)\right) = \frac{4\pi}{3}$
110. $\operatorname{arcsec}\left(\sec\left(-\frac{\pi}{2}\right)\right)$ is undefined.
112. $\operatorname{arccsc}\left(\csc\left(\frac{\pi}{6}\right)\right) = \frac{\pi}{6}$

113. $\operatorname{arccsc}\left(\csc\left(\frac{5\pi}{4}\right)\right) = \frac{5\pi}{4}$

115. $\operatorname{arccsc}\left(\csc\left(-\frac{\pi}{2}\right)\right) = \frac{3\pi}{2}$

117. $\operatorname{arcsec}\left(\sec\left(\frac{11\pi}{12}\right)\right) = \frac{13\pi}{12}$

119. $\operatorname{arcsec}\left(\sec\left(\frac{\pi}{4}\right)\right) = \frac{\pi}{4}$

121. $\operatorname{arcsec}\left(\sec\left(\frac{5\pi}{6}\right)\right) = \frac{5\pi}{6}$

123. $\operatorname{arcsec}\left(\sec\left(\frac{5\pi}{3}\right)\right) = \frac{\pi}{3}$

125. $\operatorname{arccsc}\left(\csc\left(\frac{5\pi}{4}\right)\right) = -\frac{\pi}{4}$

127. $\operatorname{arccsc}\left(\csc\left(-\frac{\pi}{2}\right)\right) = -\frac{\pi}{2}$

129. $\operatorname{arcsec}\left(\sec\left(\frac{11\pi}{12}\right)\right) = \frac{11\pi}{12}$

131. $\sin\left(\arccos\left(-\frac{1}{2}\right)\right) = \frac{\sqrt{3}}{2}$

133. $\sin(\arctan(-2)) = -\frac{2\sqrt{5}}{5}$

135. $\sin(\operatorname{arccsc}(-3)) = -\frac{1}{3}$

137. $\cos(\arctan(\sqrt{7})) = \frac{\sqrt{2}}{4}$

139. $\cos(\operatorname{arcsec}(5)) = \frac{1}{5}$

141. $\tan\left(\arccos\left(-\frac{1}{2}\right)\right) = -\sqrt{3}$

143. $\tan(\operatorname{arccot}(12)) = \frac{1}{12}$

114. $\operatorname{arccsc}\left(\csc\left(\frac{2\pi}{3}\right)\right) = \frac{\pi}{3}$

116. $\operatorname{arccsc}\left(\csc\left(\frac{11\pi}{6}\right)\right) = \frac{7\pi}{6}$

118. $\operatorname{arccsc}\left(\csc\left(\frac{9\pi}{8}\right)\right) = \frac{9\pi}{8}$

120. $\operatorname{arcsec}\left(\sec\left(\frac{4\pi}{3}\right)\right) = \frac{2\pi}{3}$

122. $\operatorname{arcsec}\left(\sec\left(-\frac{\pi}{2}\right)\right)$ is undefined.

124. $\operatorname{arccsc}\left(\csc\left(\frac{\pi}{6}\right)\right) = \frac{\pi}{6}$

126. $\operatorname{arccsc}\left(\csc\left(\frac{2\pi}{3}\right)\right) = \frac{\pi}{3}$

128. $\operatorname{arccsc}\left(\csc\left(\frac{11\pi}{6}\right)\right) = -\frac{\pi}{6}$

130. $\operatorname{arccsc}\left(\csc\left(\frac{9\pi}{8}\right)\right) = -\frac{\pi}{8}$

132. $\sin\left(\arccos\left(\frac{3}{5}\right)\right) = \frac{4}{5}$

134. $\sin(\operatorname{arccot}(\sqrt{5})) = \frac{\sqrt{6}}{6}$

136. $\cos\left(\arcsin\left(-\frac{5}{13}\right)\right) = \frac{12}{13}$

138. $\cos(\operatorname{arccot}(3)) = \frac{3\sqrt{10}}{10}$

140. $\tan\left(\arcsin\left(-\frac{2\sqrt{5}}{5}\right)\right) = -2$

142. $\tan\left(\operatorname{arcsec}\left(\frac{5}{3}\right)\right) = \frac{4}{3}$

144. $\cot\left(\arcsin\left(\frac{12}{13}\right)\right) = \frac{5}{12}$

145. $\cot\left(\arccos\left(\frac{\sqrt{3}}{2}\right)\right) = \sqrt{3}$

146. $\cot(\operatorname{arccsc}(\sqrt{5})) = 2$

147. $\cot(\arctan(0.25)) = 4$

148. $\sec\left(\arccos\left(\frac{\sqrt{3}}{2}\right)\right) = \frac{2\sqrt{3}}{3}$

149. $\sec\left(\arcsin\left(-\frac{12}{13}\right)\right) = \frac{13}{5}$

150. $\sec(\arctan(10)) = \sqrt{101}$

151. $\sec\left(\operatorname{arccot}\left(-\frac{\sqrt{10}}{10}\right)\right) = -\sqrt{11}$

152. $\csc(\operatorname{arccot}(9)) = \sqrt{82}$

153. $\csc\left(\arcsin\left(\frac{3}{5}\right)\right) = \frac{5}{3}$

154. $\csc\left(\arctan\left(-\frac{2}{3}\right)\right) = -\frac{\sqrt{13}}{2}$

155. $\sin\left(\arcsin\left(\frac{5}{13}\right) + \frac{\pi}{4}\right) = \frac{17\sqrt{2}}{26}$

156. $\cos(\operatorname{arcsec}(3) + \arctan(2)) = \frac{\sqrt{5} - 4\sqrt{10}}{15}$

157. $\tan\left(\arctan(3) + \arccos\left(-\frac{3}{5}\right)\right) = \frac{1}{3}$

158. $\sin\left(2\arcsin\left(-\frac{4}{5}\right)\right) = -\frac{24}{25}$

159. $\sin\left(2\operatorname{arccsc}\left(\frac{13}{5}\right)\right) = \frac{120}{169}$

160. $\sin(2\arctan(2)) = \frac{4}{5}$

161. $\cos\left(2\arcsin\left(\frac{3}{5}\right)\right) = \frac{7}{25}$

162. $\cos\left(2\operatorname{arcsec}\left(\frac{25}{7}\right)\right) = -\frac{527}{625}$

163. $\cos(2\operatorname{arccot}(-\sqrt{5})) = \frac{2}{3}$

164. $\sin\left(\frac{\arctan(2)}{2}\right) = \sqrt{\frac{5 - \sqrt{5}}{10}}$

165. $\sin(\arccos(x)) = \sqrt{1 - x^2}$ for $-1 \leq x \leq 1$

166. $\cos(\arctan(x)) = \frac{1}{\sqrt{1 + x^2}}$ for all x

167. $\tan(\arcsin(x)) = \frac{x}{\sqrt{1 - x^2}}$ for $-1 < x < 1$

168. $\sec(\arctan(x)) = \sqrt{1 + x^2}$ for all x

169. $\csc(\arccos(x)) = \frac{1}{\sqrt{1 - x^2}}$ for $-1 < x < 1$

170. $\sin(2\arctan(x)) = \frac{2x}{x^2 + 1}$ for all x

171. $\sin(2\arccos(x)) = 2x\sqrt{1 - x^2}$ for $-1 \leq x \leq 1$

$$172. \cos(2 \arctan(x)) = \frac{1-x^2}{1+x^2} \text{ for all } x$$

$$173. \sin(\arccos(2x)) = \sqrt{1-4x^2} \text{ for } -\frac{1}{2} \leq x \leq \frac{1}{2}$$

$$174. \sin\left(\arccos\left(\frac{x}{5}\right)\right) = \frac{\sqrt{25-x^2}}{5} \text{ for } -5 \leq x \leq 5$$

$$175. \cos\left(\arcsin\left(\frac{x}{2}\right)\right) = \frac{\sqrt{4-x^2}}{2} \text{ for } -2 \leq x \leq 2$$

$$176. \cos(\arctan(3x)) = \frac{1}{\sqrt{1+9x^2}} \text{ for all } x$$

$$177. \sin(2 \arcsin(7x)) = 14x\sqrt{1-49x^2} \text{ for } -\frac{1}{7} \leq x \leq \frac{1}{7}$$

$$178. \sin\left(2 \arcsin\left(\frac{x\sqrt{3}}{3}\right)\right) = \frac{2x\sqrt{3-x^2}}{3} \text{ for } -\sqrt{3} \leq x \leq \sqrt{3}$$

$$179. \cos(2 \arcsin(4x)) = 1-32x^2 \text{ for } -\frac{1}{4} \leq x \leq \frac{1}{4}$$

$$180. \sec(\arctan(2x)) \tan(\arctan(2x)) = 2x\sqrt{1+4x^2} \text{ for all } x$$

$$181. \sin(\arcsin(x) + \arccos(x)) = 1 \text{ for } -1 \leq x \leq 1$$

$$182. \cos(\arcsin(x) + \arctan(x)) = \frac{\sqrt{1-x^2}-x^2}{\sqrt{1+x^2}} \text{ for } -1 \leq x \leq 1$$

$$183. \tan(2 \arcsin(x)) = \frac{2x\sqrt{1-x^2}}{1-2x^2} \text{ for } x \text{ in } \left(-1, -\frac{\sqrt{2}}{2}\right) \cup \left(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right) \cup \left(\frac{\sqrt{2}}{2}, 1\right)$$

$$184. \sin\left(\frac{1}{2} \arctan(x)\right) = \begin{cases} \sqrt{\frac{\sqrt{x^2+1}-1}{2\sqrt{x^2+1}}} & \text{for } x \geq 0 \\ -\sqrt{\frac{\sqrt{x^2+1}-1}{2\sqrt{x^2+1}}} & \text{for } x < 0 \end{cases}$$

$$185. \text{ If } \sin(\theta) = \frac{x}{2} \text{ for } -\frac{\pi}{2} < \theta < \frac{\pi}{2}, \text{ then } \theta + \sin(2\theta) = \arcsin\left(\frac{x}{2}\right) + \frac{x\sqrt{4-x^2}}{2}$$

$$186. \text{ If } \tan(\theta) = \frac{x}{7} \text{ for } -\frac{\pi}{2} < \theta < \frac{\pi}{2}, \text{ then } \frac{1}{2}\theta - \frac{1}{2}\sin(2\theta) = \frac{1}{2}\arctan\left(\frac{x}{7}\right) - \frac{7x}{x^2+49}$$

187. If $\sec(\theta) = \frac{x}{4}$ for $0 < \theta < \frac{\pi}{2}$, then $4 \tan(\theta) - 4\theta = \sqrt{x^2 - 16} - 4 \operatorname{arcsec}\left(\frac{x}{4}\right)$
188. $x = \arcsin\left(\frac{7}{11}\right) + 2\pi k$ or $x = \pi - \arcsin\left(\frac{7}{11}\right) + 2\pi k$, in $[0, 2\pi)$, $x \approx 0.6898, 2.4518$
189. $x = \arccos\left(-\frac{2}{9}\right) + 2\pi k$ or $x = -\arccos\left(-\frac{2}{9}\right) + 2\pi k$, in $[0, 2\pi)$, $x \approx 1.7949, 4.4883$
190. $x = \pi + \arcsin(0.569) + 2\pi k$ or $x = 2\pi - \arcsin(0.569) + 2\pi k$, in $[0, 2\pi)$, $x \approx 3.7469, 5.6779$
191. $x = \arccos(0.117) + 2\pi k$ or $x = 2\pi - \arccos(0.117) + 2\pi k$, in $[0, 2\pi)$, $x \approx 1.4535, 4.8297$
192. $x = \arcsin(0.008) + 2\pi k$ or $x = \pi - \arcsin(0.008) + 2\pi k$, in $[0, 2\pi)$, $x \approx 0.0080, 3.1336$
193. $x = \arccos\left(\frac{359}{360}\right) + 2\pi k$ or $x = 2\pi - \arccos\left(\frac{359}{360}\right) + 2\pi k$, in $[0, 2\pi)$, $x \approx 0.0746, 6.2086$
194. $x = \arctan(117) + \pi k$, in $[0, 2\pi)$, $x \approx 1.56225, 4.70384$
195. $x = \arctan\left(-\frac{1}{12}\right) + \pi k$, in $[0, 2\pi)$, $x \approx 3.0585, 6.2000$
196. $x = \arccos\left(\frac{2}{3}\right) + 2\pi k$ or $x = 2\pi - \arccos\left(\frac{2}{3}\right) + 2\pi k$, in $[0, 2\pi)$, $x \approx 0.8411, 5.4422$
197. $x = \pi + \arcsin\left(\frac{17}{90}\right) + 2\pi k$ or $x = 2\pi - \arcsin\left(\frac{17}{90}\right) + 2\pi k$, in $[0, 2\pi)$, $x \approx 3.3316, 6.0932$
198. $x = \arctan(-\sqrt{10}) + \pi k$, in $[0, 2\pi)$, $x \approx 1.8771, 5.0187$
199. $x = \arcsin\left(\frac{3}{8}\right) + 2\pi k$ or $x = \pi - \arcsin\left(\frac{3}{8}\right) + 2\pi k$, in $[0, 2\pi)$, $x \approx 0.3844, 2.7572$
200. $x = \arccos\left(-\frac{7}{16}\right) + 2\pi k$ or $x = -\arccos\left(-\frac{7}{16}\right) + 2\pi k$, in $[0, 2\pi)$, $x \approx 2.0236, 4.2596$
201. $x = \arctan(0.03) + \pi k$, in $[0, 2\pi)$, $x \approx 0.0300, 3.1716$
202. $x = \arcsin(0.3502) + 2\pi k$ or $x = \pi - \arcsin(0.3502) + 2\pi k$, in $[0, 2\pi)$, $x \approx 0.3578, 2.784$
203. $x = \pi + \arcsin(0.721) + 2\pi k$ or $x = 2\pi - \arcsin(0.721) + 2\pi k$, in $[0, 2\pi)$, $x \approx 3.9468, 5.4780$
204. $x = \arccos(0.9824) + 2\pi k$ or $x = 2\pi - \arccos(0.9824) + 2\pi k$, in $[0, 2\pi)$, $x \approx 0.1879, 6.0953$
205. $x = \arccos(-0.5637) + 2\pi k$ or $x = -\arccos(-0.5637) + 2\pi k$, in $[0, 2\pi)$, $x \approx 2.1697, 4.1135$
206. $x = \arctan(117) + \pi k$, in $[0, 2\pi)$, $x \approx 1.5622, 4.7038$
207. $x = \arctan(-0.6109) + \pi k$, in $[0, 2\pi)$, $x \approx 2.5932, 5.7348$
208. 68.9° 209. 7.7° 210. 51° 211. 19.5° 212. 41.81°