Solving trigonometric equations: 10 practice questions

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Name: _____ Date: _____

Attempt all questions and show your working. Unless a question says otherwise, solve for $0° \le x \le 360°$ and give exact answers where possible, otherwise correct to one decimal place. Suggested time: 15 to 20 minutes.

Section A: Consolidating (Questions 1-4)

Question 1

Solve $\sin x = \frac{1}{2}$.

Question 2

Solve $\cos x = -\frac{1}{2}$.

Question 3

Solve $\tan x = 1$.

Question 4

Solve $\sin x = 0.4$, correct to one decimal place.

Section B: Standard (Questions 5-10)

Question 5

Solve $2\cos x + \sqrt{3} = 0$.

Question 6

Solve:

(a) $\sqrt{3} \tan x = 1$

(b) $\tan x = -\sqrt{3}$

Question 7

Solve $\sin x = -0.7$, correct to one decimal place.

Question 8

Solve $5\cos x + 2 = 0$, correct to one decimal place.

Question 9

Solve for $-180° \leq x \leq 180°$:

(a) $\sin x = -\frac{\sqrt{2}}{2}$

(b) $\cos x = 0$

Question 10

Solve $\sin 2x = \frac{\sqrt{3}}{2}$. (Hint: first find the values of $2x$ between $0°$ and $720°$.)

Solving trigonometric equations: answers

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Question 1

Answer: x = 30°, 150°

Question 2

Answer: x = 120°, 240°

Question 3

Answer: x = 45°, 225°

Question 4

Answer: x = 23.6°, 156.4° (180 - 23.6)

Question 5

Answer: x = 150°, 210° (cos x = -(√3)/(2))

Question 6

Answer: (a) x = 30°, 210° (tan x = (1)/(√3)) (b) x = 120°, 300°

Question 7

Answer: x = 224.4°, 315.6° (reference angle 44.4°; 180 + 44.4 and 360 - 44.4)

Question 8

Answer: x = 113.6°, 246.4° (cos x = -0.4)

Question 9

Answer: (a) x = -135°, -45° (b) x = -90°, 90°

Question 10

Answer: x = 30°, 60°, 210°, 240° (2x = 60°, 120°, 420°, 480°)