

Trig equations

- Find the two solutions for each of the following in the range $0 \leq x \leq 360$:
(Give each answer correct to the nearest whole degree).
 - $\sin x^\circ = 0.500$
 - $\cos x^\circ = 0.707$
 - $\tan x^\circ = 0.869$
 - $\cos x^\circ = 0.940$
 - $\tan x^\circ = 1.280$
 - $\sin x^\circ = 0.574$
 - $\sin x^\circ = 0.990$
 - $\tan x^\circ = 6.314$
 - $\cos x^\circ = 0.391$
 - $\cos x^\circ = 0.985$
 - $\sin x^\circ = 0.866$
 - $\tan x^\circ = 1.732$
- Rearrange each of the following and solve them in the range $0 \leq x \leq 360$.
(Give your answers correct to 1 decimal place).
 - $2\cos x^\circ - 1 = 0$
 - $5\sin x^\circ - 4 = 0$
 - $10\tan x^\circ - 7 = 0$
 - $1 - 3\sin x^\circ = 0$
 - $5 - 6\cos x^\circ = 0$
 - $3\tan x^\circ - 5 = 0$
- Find the two solutions for each of the following in the range $0 \leq x \leq 360$:
(Give each answer correct to the nearest whole degree).
 - $\sin x^\circ = -0.500$
 - $\cos x^\circ = -0.707$
 - $\tan x^\circ = -0.384$
 - $\cos x^\circ = -0.292$
 - $\tan x^\circ = -1.000$
 - $\sin x^\circ = -0.866$
 - $\tan x^\circ = -4$
 - $\sin x^\circ = -0.174$
 - $\cos x^\circ = -0.927$
- Rearrange each of the following and solve them in the range $0 \leq x \leq 360$.
(Give your answers correct to 1 decimal place).
 - $4\sin x^\circ + 1 = 0$
 - $5\cos x^\circ + 3 = 0$
 - $3\tan x^\circ + 1 = 0$
 - $7 + 8\cos x^\circ = 0$
 - $0.4\sin x^\circ + 0.3 = 0$
 - $5\tan x^\circ + 8 = 0$
- Solve the following mixture of trigonometric equations in the range $0 \leq x \leq 360$.
(Give your answers correct to 1 decimal place).
 - $\sin x^\circ = 0.323$
 - $\cos x^\circ = -0.9$
 - $\tan x^\circ = 0.678$
 - $\cos x^\circ = 1/4$
 - $\sin x^\circ = -0.707$
 - $\tan x^\circ = -2$
 - $\sin x^\circ = 3/5$
 - $\cos x^\circ = -0.111$
 - $\tan x^\circ = 5/8$
 - $8\sin x^\circ + 5 = 0$
 - $6\cos x^\circ + 3 = 0$
 - $1 - 5\tan x^\circ = 0$
 - $20\sin x^\circ - 17 = 0$
 - $15 - 25\cos x^\circ = 0$
 - $8\tan x^\circ + 7 = 0$
 - $5\sin x^\circ + 3 = 2\sin x^\circ + 5$
 - $7\cos x^\circ - 1 = \cos x^\circ + 4$
 - $10\tan x^\circ + 8 = 3\tan x^\circ + 4$
 - $6\sin x^\circ + 11 = 3\sin x^\circ + 10$

Answers

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|---------------------|-------------------|-------------------|
| 1. (a) 30, 150 | (b) 45, 315 | (c) 41, 221 |
| (d) 20, 340 | (e) 52, 232 | (f) 35, 145 |
| (g) 82, 98 | (h) 81, 261 | (i) 67, 293 |
| (j) 10, 350 | (k) 60, 120 | (l) 60, 240. |
| 2. (a) 60, 300 | (b) 53·1 or 126·9 | (c) 35·0, 215·0 |
| (d) 19·5, 160·5 | (e) 33·6, 326·4 | (f) 59·0, 239·0. |
| 3. (a) 210, 330 | (b) 135, 225 | (c) 159, 339 |
| (d) 107, 253 | (e) 135, 315 | (f) 240, 300 |
| (g) 104, 284 | (h) 190, 350 | (i) 158, 202. |
| 4. (a) 194·5, 345·5 | (b) 126·9, 233·1 | (c) 161·6, 341·6 |
| (d) 151·0, 209·0 | (e) 228·6, 311·4 | (f) 122·0, 302·0. |
| 5. (a) 18·8, 161·2 | (b) 154·2, 205·8 | (c) 34·1, 214·1 |
| (d) 75·5, 284·5 | (e) 225, 315 | (f) 116·6, 296·6 |
| (g) 36·9, 143·1 | (h) 96·4, 263·6 | (i) 32·0, 212·0 |
| (j) 218·7, 321·3 | (k) 120, 240 | (l) 11·3, 191·3 |
| (m) 58·2, 121·8 | (n) 53·1, 306·9 | (o) 138·8, 318·8 |
| (p) 41·8, 138·2 | (q) 33·6, 326·4 | (r) 150·3, 330·3 |
| (s) 199·5, 340·5°. | | |