

Extra Review Worksheet

(Sections 5.1-5.5)

I. Simplify:

1) $\cos 23^\circ \cos 22^\circ - \sin 23^\circ \sin 22^\circ$ 2) $\sin 130^\circ \cos 20^\circ - \cos 130^\circ \sin 20^\circ$ 3) $\cos^2 \frac{x}{10} - \sin^2 \frac{x}{10}$

4) $\cos(60^\circ + x) + \cos(60^\circ - x)$

II. Given $\sin \beta = \frac{4}{5}$, and $0 < \beta < \frac{\pi}{2}$ and $\cos \alpha = \frac{-8}{17}$, and $\frac{\pi}{2} < \alpha < \pi$. Find the exact value of :

5) $\cos(\beta - \alpha)$ 6) $\cos 2\beta$ 7) $\sin 2\beta$ 8) $\tan(\alpha - \beta)$ 9) $\sin(\alpha + \beta)$

III. Evaluate:

10) $\sin \frac{5\pi}{12} \cos \frac{5\pi}{12}$ 11) $2 \cos^2 \frac{\pi}{12} - 1$

IV. Simplify:

12) $(1 - \cos^2 x)(1 - \cot^2 x)$ 13) $\frac{(\sin 3x \cos x) - (\cos 3x \sin x)}{\sin 2x}$ 14) $2 \sin x \cos x \sec 2x$

V. Solve for x , when $0 \leq x < 2\pi$

15) $2 \sin^2 x = 2 + \cos 2x$ 16) $\sin 2x + \sin x = 0$ 17) $\cos 3x - \sin 3x = 0$

18) $\sin 2x - \sin x - 2 \cos x + 1 = 0$ 19) $-3 \cot x = 2 \sin x$ 20) $4 \cos^2 x = 8 - 12 \sin^2 x$

VI. Additional Problems

21) Using the power reduction formulas to reduce $\sin^2 \theta \cos^2 \theta$

22) Using the sum/difference formula, find the exact value of $\cos 105^\circ$

23) Find all solutions for : $\csc \frac{3\theta}{2} = -2$

VII. Prove the following identity:

24) $\frac{\sin(\alpha - \beta)}{\sin \alpha \cos \beta} = 1 - \cot \alpha \tan \beta$

Study all of your Identities!!!!!!

Answers

- ① $\cos 45^\circ = \frac{\sqrt{2}}{2}$
- ② $\sin 110^\circ$
- ③ $\cos x/5$
- ④ $\cos x$
- ⑤ $\cos(\beta - \alpha) = \frac{36}{85}$
- ⑥ $\cos 2\beta = -\frac{7}{25}$
- ⑦ $\sin 2\beta = \frac{24}{25}$
- ⑧ $\tan(\alpha - \beta) = \frac{77}{36}$
- ⑨ $\sin(\alpha + \beta) = \frac{13}{85}$
- ⑩ $\frac{1}{4}$
- ⑪ $\frac{\sqrt{3}}{2}$
- ⑫ $-\cos 2x$
- ⑬ 1
- ⑭ $\tan 2x$
- ⑮ $x = \frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$
- ⑯ $x = 0, \pi, \frac{2\pi}{3}, \frac{4\pi}{3}$
- ⑰ $x = \frac{\pi}{12}, \frac{5\pi}{12}, \frac{9\pi}{12}, \frac{13\pi}{12}, \frac{17\pi}{12}, \frac{21\pi}{12}$
- ⑱ $x = \frac{\pi}{2}, \frac{\pi}{3}, \frac{5\pi}{3}$
- ⑲ $x = \frac{2\pi}{3}, \frac{4\pi}{3}$
- ⑳ $x = \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$
- ㉑ $\frac{1}{8}(1 - \cos 4\theta)$
- ㉒ $\frac{\sqrt{2} - \sqrt{6}}{4}$ OR $-\frac{(\sqrt{6} - \sqrt{2})}{4}$
- ㉓ $\theta = \frac{7\pi}{9} + \frac{4\pi}{3}n, \frac{11\pi}{9} + \frac{4\pi}{3}n; n \in \mathbb{Z}$
- ㉔ Proof

Make sure that you know how to use your graphing calculator to find zeros or intersections

Make sure you read the directions. Sometimes the interval changes to degrees.