

REVIEW TEST #1

Chapters 1, 2, and 3

To prepare for the test, study all examples and exercises done in class as well as the homework problems:

Chapter 1 – The Six Trigonometric Functions

- Section 1.1
- Section 1.3
- Section 1.4
- Section 1.5

Chapter 2 – Right Triangle Trigonometry

- Handout 1 – 24
- Section 2.1 For exercises 27 through 52, work with degrees (as in the book), then redo the exercises in radians.
- Section 2.3
- Section 2.5

Chapter 3 – Radian Measure

- Section 3.1 Only 1 – 45 odd
- Section 3.2 27, 51, 54, 57, 60, 63, 66, 69, 72, 75, 78, 81
- Section 3.3
- Section 3.5 5, 12, 20, 43, 49

More applications

1. Find $\sin \frac{11p}{2}, \cos 7p, \tan 6p$.
2. Find all the other trigonometric functions of q if $\tan q = \frac{-1}{3}$ and $\sin q > 0$.
3. Simplify: $\frac{\sin(-20^\circ)}{\cos 380^\circ} + \tan 200^\circ$.
4. Write $\tan t$ in terms of $\cos t$.
5. If $f(q) = \cos q$ and $f(a) = \frac{1}{4}$, find:
 - a) $f(-a)$
 - b) $f(a) + f(a + 2p) + f(a - 2p)$

6. Prove the following identities:

a) $\tan x \cot x - \cos^2 x = \sin^2 x$

d) $\frac{\sec x}{1 - \sin x} = \frac{1 + \sin x}{\cos^3 x}$

b) $9\sec^2 t - 5\tan^2 t = 5 + 4\sec^2 t$

e) $\frac{\cos t + \sin t - \sin^3 t}{\sin t} = \cot t + \cos^2 t$

c) $\frac{\cos a}{1 + \sin a} + \frac{1 + \sin a}{\cos a} = 2\sec a$

f) $\tan a \tan b = \frac{\tan a + \tan b}{\cot a + \cot b}$

7. Find sine and cosine of t if t is:

a) $-\frac{p}{3}$

c) $\frac{11p}{6}$

e) $\frac{7p}{3}$

g) $\frac{13p}{6}$

i) $\frac{16p}{3}$

b) $\frac{7p}{6}$

d) $\frac{5p}{4}$

f) $-\frac{9p}{4}$

h) $\frac{17p}{4}$

j) $-\frac{41p}{4}$

8. Write the first expression in terms of the second if the terminal point determined by t is in the given quadrant.

a) $\sin t, \cos t$; t is in quadrant I

b) $\cos t, \sin t$; t is in IV

c) $\tan t, \sin t$; t is in IV

d) $\sin t, \sec t$; t is in II

9. Determine whether the function is even, odd, or neither.

a) $f(x) = \sin x \cos x$

b) $g(x) = |x| \cos x$

c) $h(x) = x \sin^3 x$

10. Explain using the unit circle why the following formulas are valid:

a) $\sin(t + \pi) = -\sin t$

b) $\cos(t + \pi) = -\cos t$

Answers selected problems

#1) -1, -1, 0. #2) $\sin q = \frac{\sqrt{10}}{10}, \cos q = -\frac{3\sqrt{10}}{10}$. #3) 0. #5) a) $\frac{1}{4}$; b) $\frac{3}{4}$. #7) a) $\cos t = \frac{1}{2}, \sin t = -\frac{\sqrt{3}}{2}$;

d) $\sin t = \cos t = -\frac{\sqrt{2}}{2}$; e) $\sin t = \frac{\sqrt{3}}{2}, \cos t = \frac{1}{2}$; g) $\sin t = \frac{1}{2}, \cos t = \frac{\sqrt{3}}{2}$; i) $\sin t = -\frac{\sqrt{3}}{2}, \cos t = -\frac{1}{2}$.

#9) a) odd; b) even; c) even