

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 following homework problems:

Chapter 1 – The Six Trigonometric Functions

Section 1.1	33, 36, 37, 39, 43 – 48, 53 – 58
Section 1.2	80, 81
Section 1.3	1, 5, 8, 9, 20, 29, 32, 34, 35, 38, 41, 43, 46, 48, 53, 59, 65, 67, 71
Section 1.4	28, 30, 35, 38, 41, 44, 47, 55, 58
Section 1.5	1, 4, 7, 28, 31, 34, 37, 40, 43, 46, 49, 55, 59 – 91 (odd)

Chapter 2 – Right Triangle Trigonometry

Handout	1 – 24
Section 2.1	1, 4, 8, 11, 14, 27 – 36 (all), 45 – 52 (all), 53, 55. Note: For 27 – 36 and 45 – 52, work with degrees (as in the book), then redo the exercises in radians.
Section 2.3	1, 4, 7, 19, 22, 25, 35, 38, 39, 42, 43, 46

Chapter 3 – Radian Measure

Section 3.1	13, 16, 19, 22, 25, 28 Note: Work with degrees, then redo all exercises in radians.
Section 3.2	27, 51, 54, 57, 60, 63, 66, 69, 72, 75, 78, 81
Section 3.3	3, 4, 7, 8, 11, 12, 15, 16, 17 – 22 (give all answers in radians), 39 – 42, 47, 50, 53 – 60
Section 3.4	13, 15, 47, 53, 54
Section 3.5	43, 44, 49, 53, 54

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