



SAC MATHEMATICS DEPARTMENT
Course Reference Sheet



Course: Math 160 – Trigonometry

Coordinator	PHONE #	EMAIL	REVISED
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Prerequisite:

Math 070 and 080 (C or better) or equivalent skills (as measured by a satisfactory score on the Math Level 3 exam and course equivalents)

Math Placement Test Cutoff Score	Level	Score
	III	18

	Title	Ed	Author	Publisher	ISBN
Textbook:	Trigonometry, ©2011	3rd	Mark Dugopolski	Pearson	0-321-64475- 1 Pkg 0-558-69826-3

Cover: Chapters 1 – 6

Skip Section: 6.5

Optional Sections: P.1 – P.4 , and 3.6.

Critical Sections for next course: most of the course

Auxiliary Materials Available:

- Video lectures
- Online instruction materials

Grading Standards				
HOMEWORK	QUIZZES	TESTS (4 – 6)	PROJECTS	FINAL EXAM
0 – 15 %	0 – 15 %	50 – 70 %		20 – 33 %

Departmental final exam: YES.

- Part I: multiple choice (no calculators allowed)
- Part II: free response (calculators allowed)
- No formulas are to be given for either part.

Calculator Use on Test OK?

YES, A graphing calculator is required. TI-83 / TI-84 silver edition is recommended. (TI-89, TI-92, or equivalent (those with CAS), are not allowed).

❖ **Note:**

1. It is important for students to be able to give exact values of trig functions and for radians of quadrantal angles and angles that are multiples of 30, 45, and 60 degrees.

2. Students are expected to memorize the attached list of identities.

Math 160 Identities and Formulas to Know by Hart

(MacBride-Hart, that is)

By the end of the semester

<p style="text-align: center;"><u>Ratio</u></p> <p>1. $\frac{\sin x}{\cos x} = \tan x$</p> <p>2. $\frac{\cos x}{\sin x} = \cot x$</p>	<p style="text-align: center;"><u>Reciprocal</u></p> <p>3. $\frac{1}{\cos x} = \sec x$</p> <p>4. $\frac{1}{\sin x} = \csc x$</p>	<p style="text-align: center;"><u>Pythagorean</u></p> <p>5. $\sin^2 A + \cos^2 A = 1$</p> <p>6. $1 + \tan^2 A = \sec^2 A$</p> <p>7. $1 + \cot^2 A = \csc^2 A$</p>
<p>8. Know the exact values of sine, cosine, and tangent for $0^\circ, 30^\circ, 45^\circ, 60^\circ, 90^\circ$. Be able to apply these to all the quadrants.</p>	<p style="text-align: center;"><u>Sum/Difference</u></p> <p>9. $\sin(A + B) = \sin A \cos B + \sin B \cos A$</p> <p>10. $\cos(A + B) = \cos A \cos B - \sin A \sin B$</p> <p>11. $\tan(A + B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$</p>	
<p style="text-align: center;"><u>Double Angle</u></p> <p>12. $\sin 2A = 2 \sin A \cos A$</p> <p>13. $\cos 2A = \cos^2 A - \sin^2 A$</p> <p>14. $\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$</p>	<p style="text-align: center;"><u>Even/Odd Functions</u></p> <p>15. $\cos(-\theta) = \cos \theta$ (<i>even</i>)</p> <p>16. $\sin(-\theta) = -\sin \theta$ (<i>odd</i>)</p> <p>17. $\tan(-\theta) = -\tan \theta$ (<i>odd</i>)</p>	<p style="text-align: center;"><u>Cofunctions</u></p> <p>18. $\sin x = \cos(90^\circ - x)$</p> <p>19. $\cos x = \sin(90^\circ - x)$</p> <p>20. $\tan x = \cot(90^\circ - x)$</p>
<p style="text-align: center;"><u>Arc Length</u></p> <p>21. $S = r\theta$ θ in radians</p> <p>22. $S = \frac{n^\circ}{360^\circ} 2\pi r$ n in degrees</p>	<p style="text-align: center;"><u>Sector Area</u></p> <p>23. $A = \frac{\alpha r^2}{2}$ θ in radians</p> <p>24. $A = \frac{n^\circ}{360^\circ} \pi r^2$ n in degrees</p>	
<p style="text-align: center;">25. <u>Law of Sines</u></p> $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} = \frac{\text{side}}{\sin(\text{opp angle})}$	<p style="text-align: center;">26. <u>Law of Cosines</u></p> $a^2 = b^2 + c^2 - 2bc \cos A$ $(\text{sd } 1)^2 = (\text{sd } 2)^2 + (\text{sd } 3)^2 - 2(\text{sd } 2)(\text{sd } 3)\cos(\text{angle opp sd } 1)$	
<p style="text-align: center;"><u>Area of a Triangle</u></p> <p>27. for SAS $A = \frac{1}{2} ab \sin C$</p> <p>28. for SSS $A = \sqrt{s(s-a)(s-b)(s-c)}$ where $s = \frac{1}{2}(a+b+c)$</p>		