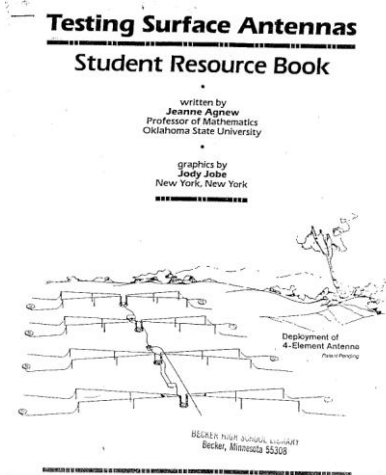


TESTING SURFACE ANTENNAS PROJECT May 2013



GOAL: Apply the knowledge of trigonometry and algebra to solve a complicated three-dimensional problem and report out the findings while working in groups.

I. Teams

Each team will consist of 3-4 individuals

II. Overview

You are a member of a design team for a company that has been approached by the antenna company to develop a plan to interpret the data received from the testing of their antenna. You will be tasked to solve problems given specific data cases and then develop a process to solve the problem given any data input.

III. Timeline

Wednesday, May 15 th :	Books handed out, project introduced, Project Teams assigned
May 15 th – May 24 th :	In-Class problem solving
Thursday, May 24 th :	Project completed

IV. Grading

This project is worth 120 pts in the test category

Task #1:

Case A: 20 pts - 5 solution/5 trying/10 presentation
Case B: 20 pts
Case C: 20 pts
Case D: 20 pts

Task #2:

General Case/Spreadsheet: 30 pts

Task #3:

Special Cases: 10 pts

Task #4:

Model of the test field: 10 pts (extra credit)

Task #5:

Changing Positions: 10 pts (extra credit)

V. General Information

I am the CEO of the antenna company and I will be available for questions regarding what information I am asking for and providing to you. Questions on how to solve the problem will not be answered and will reflect negatively on your company.

Your company must complete each task and present it to the CEO. The presentation must include the process you went through to solve each task. Diagrams, equations, detailed list of variables and an explanation of the steps in the solution process are some of the things the CEO is looking for in the presentation. Make sure and listen carefully to the CEO's presentation so you can understand the expectations of the company. After you successfully complete each task the CEO may give you more directions on completing the next task.

Task #1 involves solving the specific cases given to you by the antenna company.

Task #2 requires you to develop a general solution to the problem using a spreadsheet. This means the company should be able to give you any inputs and your company should be able to provide the solutions. A printout of each of the cases from Task #1 must be included to show a properly functioning spreadsheet.

In Task #3 the antenna company will give you special cases of the helicopters position. You may have taken care of this in Task #2. Mr. Duhrkopf will give you the special case options as needed.

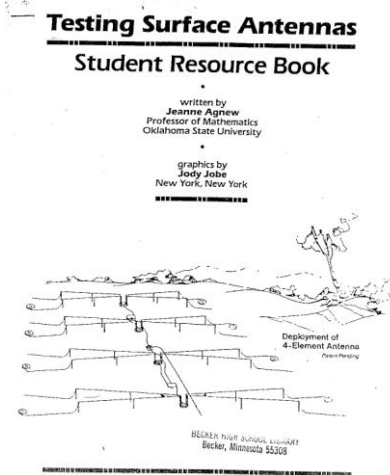
Task #4 can be completed at anytime and may be very helpful in solving Task #1-3.

Task #5 will involve developing your general solution to handle a change in the height of the helicopter, the height of the beacon and most importantly the location of the antenna. In the previous tasks the height of the helicopter, beacon and antenna position are fixed.

To help elevate some of the stress involved with this project the CEO of the company may confirm whether your answers to Task #1 are correct. The project requires the use of trigonometry and solutions may be arrived at in different manners, but one specific way can handle the specific, general and special cases.

****Make sure and ask questions on Wednesday and Thursday, the CEO will be out of town after that!****

TESTING SURFACE ANTENNAS PROJECT May 2012



GOAL: Apply the knowledge of trigonometry and algebra to solve a complicated three-dimensional problem and report out the findings while working in groups.

I. Teams

Each team will consist of 3 individuals

II. Overview

You are a member of a design team for a company that has been approached by the antenna company to develop a plan to interpret the data received from the testing of their antenna. You will be tasked to solve problems given specific data cases and then develop a process to solve the problem given any data input.

III. Timeline

Friday, May 11 th :	Books handed out and project introduced by Mr. Duhrkopf
Monday, May 14 th :	Project Teams assigned
May 14 th – May 22 nd :	In-Class problem solving
Tuesday, May 22 nd :	Project completed

IV. Grading

This project is worth 140 pts in the test category

Task #1:

Case A: 20 pts - 5 solution/5 trying/10 presentation
Case B: 20 pts
Case C: 20 pts
Case D: 20 pts

Task #2:

General Case: 20 pts

Task #3:

Special Cases: 20 pts

Task #4:

Spreadsheet: 20 pts

Task #5:

Changing Positions: 20 pts

V. General Information

I am the CEO of the antenna company and I will be available for questions regarding what information I am asking for and providing to you. Questions on how to solve the problem will not be answered and will reflect negatively on your company.

Your company must complete each task and present it to the CEO. The presentation must include the process you went through to solve each task. Diagrams, equations, detailed list of variables and an explanation of the steps in the solution process are some of the things the CEO is looking for in the presentation. Make sure and listen carefully to the CEO's presentation so you can understand the expectations of the company. After you successfully complete each task the CEO may give you more directions on completing the next task.

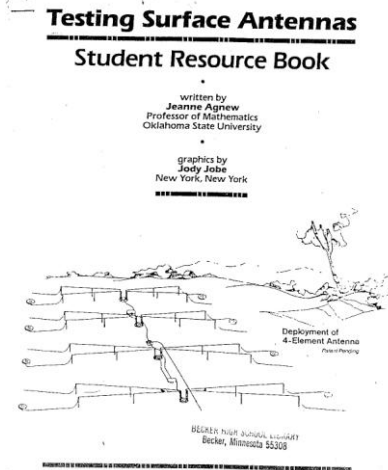
Task #1 involves solving the specific cases given to you by the antenna company. Task #2 requires you to develop a general solution to the problem. This means the company should be able to give you any inputs and your company should be able to provide the solutions. In Task #3 the antenna company will give you special cases of the helicopters position. You may have taken care of this in Task #2. To complete Task #4 you will develop an Excel spreadsheet for your step-by-step general solution. This task could possibly be completed while doing Task #2. A printout of each of the cases from Task #1 and #3 must be included to show a properly functioning spreadsheet.

Task #5 will involve developing your general solution to handle a change in the height of the helicopter, the height of the beacon and most importantly the location of the antenna. In the previous tasks the height of the helicopter, beacon and antenna position are fixed.

To help elevate some of the stress involved with this project the CEO of the company may confirm whether your answers to Task #1 are correct. The project requires the use of trigonometry and solutions may be arrived at in different manners, but one specific way can handle the specific, general and special cases.

****Make sure and ask questions on Monday and Tuesday, the CEO will be out of town after that!****

TESTING SURFACE ANTENNAS PROJECT Jan 2011



GOAL: Apply the knowledge of trigonometry and algebra to solve a complicated three-dimensional problem and report out the findings while working in groups.

I. Teams

Each team will consist of 3-4 individuals

II. Overview

You are a member of a design team for a company that has been approached by the antenna company to develop a plan to interpret the data received from the testing of their antenna. You will be tasked to solve problems given specific data cases and then develop a process to solve the problem given any data input.

III. Timeline

Monday, January 3 rd :	Books handed out and project introduced by Mr. Duhrkopf
Tuesday, January 4 th :	Project Teams assigned
January 4 th – January 13 th :	In-Class problem solving
Thursday, January 13 th :	Project completed

IV. Grading

This project is worth 140 pts in the test category

Task #1:

Case A: 20 pts - 5 solution/5 trying/10 presentation
Case B: 20 pts
Case C: 20 pts
Case D: 20 pts

Task #2:

General Case: 20 pts

Task #3:

Special Cases: 20 pts

Task #4:

Spreadsheet: 20 pts

Task #5:

Changing Positions: 20 pts

V. General Information

I am the CEO of the antenna company and I will be available for questions regarding what information I am asking for and providing to you. Questions on how to solve the problem will not be answered and will reflect negatively on your company.

Your company must complete each task and present it to the CEO. The presentation must include the process you went through to solve each task. Diagrams, equations, detailed list of variables and an explanation of the steps in the solution process are some of the things the CEO is looking for in the presentation. Make sure and listen carefully to the CEO's presentation so you can understand the expectations of the company. After you successfully complete each task the CEO may give you more directions on completing the next task.

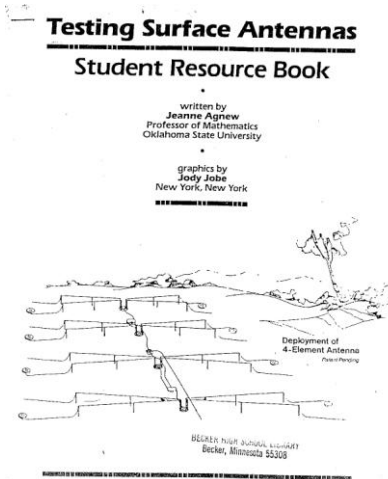
Task #1 involves solving the specific cases given to you by the antenna company. Task #2 requires you to develop a general solution to the problem. This means the company should be able to give you any inputs and your company should be able to provide the solutions. In Task #3 the antenna company will give you special cases of the helicopters position. You may have taken care of this in Task #2. To complete Task #4 you will develop an Excel spreadsheet for your step-by-step general solution. This task could possibly be completed while doing Task #2. A printout of each of the cases from Task #1 and #3 must be included to show a properly functioning spreadsheet.

Task #5 will involve developing your general solution to handle a change in the height of the helicopter, the height of the beacon and most importantly the location of the antenna. In the previous tasks the height of the helicopter, beacon and antenna position are fixed.

To help elevate some of the stress involved with this project the CEO of the company may confirm whether your answers to Task #1 are correct. The project requires the use of trigonometry and solutions may be arrived at in different manners, but one specific way can handle the specific, general and special cases.

****Make sure and ask questions on Tuesday and Wednesday, the CEO will be out of town after that!****

TESTING SURFACE ANTENNAS PROJECT Mar 2010



GOAL: Apply the knowledge of trigonometry and algebra to solve a complicated three-dimensional problem and report out the findings while working in groups.

I. Teams

Each team will consist of 3-4 individuals

II. Overview

You are a member of a design team for a company that has been approached by the antenna company to develop a plan to interpret the data received from the testing of their antenna. You will be tasked to solve problems given specific data cases and then develop a process to solve the problem given any data input.

III. Timeline

Monday, March 15 th :	Books handed out and project introduced by Mr. Duhrkopf
Tuesday, March 16 th :	Project Teams assigned
March 16 th – March 23 rd :	In-Class problem solving
Tuesday, March 23 rd :	Project completed

IV. Grading

This project is worth 140 pts in the test category

Task #1:

Case A: 20 pts - 5 solution/5 trying/10 presentation
Case B: 20 pts
Case C: 20 pts
Case D: 20 pts

Task #2:

General Case: 20 pts

Task #3:

Special Cases: 20 pts

Task #4:

Spreadsheet: 20 pts

Task #5:

Changing Positions: 20 pts

V. General Information

I am the CEO of the antenna company and I will be available for questions regarding what information I am asking for and providing to you. Questions on how to solve the problem will not be answered and will reflect negatively on your company.

Your company must complete each task and present it to the CEO. The presentation must include the process you went through to solve each task. Diagrams, equations, detailed list of variables and an explanation of the steps in the solution process are some of the things the CEO is looking for in the presentation. Make sure and listen carefully to the CEO's presentation so you can understand the expectations of the company. After you successfully complete each task the CEO may give you more directions on completing the next task.

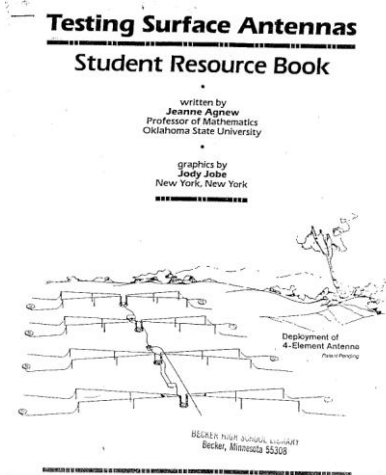
Task #1 involves solving the specific cases given to you by the antenna company. Task #2 requires you to develop a general solution to the problem. This means the company should be able to give you any inputs and your company should be able to provide the solutions. In Task #3 the antenna company will give you special cases of the helicopters position. You may have taken care of this in Task #2. To complete Task #4 you will develop an Excel spreadsheet for your step-by-step general solution. This task could possibly be completed while doing Task #2. A printout of each of the cases from Task #1 and #3 must be included to show a properly functioning spreadsheet.

Task #5 will involve developing your general solution to handle a change in the height of the helicopter, the height of the beacon and most importantly the location of the antenna. In the previous tasks the height of the helicopter, beacon and antenna position are fixed.

To help elevate some of the stress involved with this project the CEO of the company may confirm whether your answers to Task #1 are correct. The project requires the use of trigonometry and solutions may be arrived at in different manners, but one specific way can handle the specific, general and special cases.

****Make sure and ask questions on Tuesday and Wednesday, the CEO will be out of town after that!****

TESTING SURFACE ANTENNAS PROJECT Feb 2009



GOAL: Apply the knowledge of trigonometry and algebra to solve a complicated three-dimensional problem and report out the findings while working in groups.

I. Teams

Each team will consist of 3-4 individuals

II. Overview

You are a member of a design team for a company that has been approached by the antenna company to develop a plan to interpret the data received from the testing of their antenna. You will be tasked to solve problems given specific data cases and then develop a process to solve the problem given any data input.

III. Timeline

Friday, February 13 th :	Books handed out and project introduced by Mr. Duhrkopf
Monday, February 16 th :	Project Teams assigned
February 16 th – February 23 rd :	In-Class problem solving
Monday, February 23 rd :	Project completed

IV. Grading

This project is worth 140 pts in the test category

Task #1:

Case A: 20 pts - 5 solution/5 trying/10 presentation
Case B: 20 pts
Case C: 20 pts
Case D: 20 pts

Task #2:

General Case: 20 pts

Task #3:

Special Cases: 20 pts

Task #4:

Spreadsheet: 20 pts

Task #5:

Changing Positions: 20 pts

V. General Information

I am the CEO of the antenna company and I will be available for questions regarding what information I am asking for and providing to you. Questions on how to solve the problem will not be answered and will reflect negatively on your company.

Your company must complete each task and present it to the CEO. The presentation must include the process you went through to solve each task. Diagrams, equations, detailed list of variables and an explanation of the steps in the solution process are some of the things the CEO is looking for in the presentation. Make sure and listen carefully to the CEO's presentation so you can understand the expectations of the company. After you successfully complete each task the CEO may give you more directions on completing the next task.

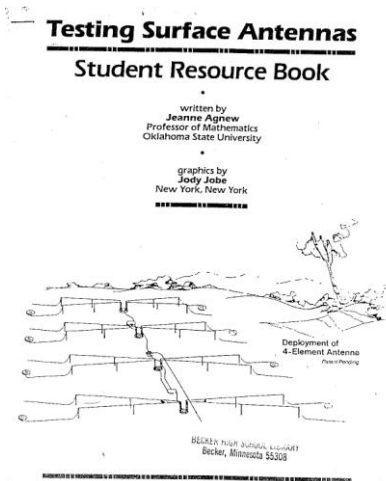
Task #1 involves solving the specific cases given to you by the antenna company. Task #2 requires you to develop a general solution to the problem. This means the company should be able to give you any inputs and your company should be able to provide the solutions. In Task #3 the antenna company will give you special cases of the helicopters position. You may have taken care of this in Task #2. To complete Task #4 you will develop an Excel spreadsheet for your step-by-step general solution. This task could possibly be completed while doing Task #2. A printout of each of the cases from Task #1 and #3 must be included to show a properly functioning spreadsheet.

Task #5 will involve developing your general solution to handle a change in the height of the helicopter, the height of the beacon and most importantly the location of the antenna. In the previous tasks the height of the helicopter, beacon and antenna position are fixed.

To help elevate some of the stress involved with this project the CEO of the company may confirm whether your answers to Task #1 are correct. The project requires the use of trigonometry and solutions may be arrived at in different manners, but one specific way can handle the specific, general and special cases.

****Make sure and ask questions on Monday and Tuesday, the CEO will be out of town after that!****

TESTING SURFACE ANTENNAS PROJECT Nov 2007



GOAL: Apply the knowledge of trigonometry and algebra to solve a complicated three-dimensional problem and report out the findings while working in groups.

I. Teams

Each team will consist of 2-3 individuals

II. Overview

You are a member of a design team for a company that has been approached by the antenna company to develop a plan to interpret the data received from the testing of their antenna. You will be tasked to solve problems given specific data cases and then develop a process to solve the problem given any data input.

III. Timeline

Tuesday, November 27 th :	Books handed out and project introduced by Mr. Duhrkopf
Wednesday, November 28 th :	Project Teams assigned
November 28 th – December 6 th :	In-Class problem solving
Thursday, December 6 th :	Project completed

IV. Grading

This project is worth 140 pts in the test category and will serve as your semester test

Task #1:

Case A: 20 pts - 5 solution/5 trying/10 presentation
Case B: 20 pts
Case C: 20 pts
Case D: 20 pts

Task #2:

General Case: 20 pts

Task #3:

Special Cases: 20 pts

Task #4:

Spreadsheet: 20 pts

Task #5:

Changing Positions: 20 pts

V. General Information

I am the CEO of the antenna company and I will be available for questions regarding what information I am asking for and providing to you. Questions on how to solve the problem will not be answered and will reflect negatively on your company.

Your company must complete each task and present it to the CEO. The presentation must include the process you went through to solve each task. Diagrams, equations, detailed list of variables and an explanation of the steps in the solution process are some of the things the CEO is looking for in the presentation. Make sure and listen carefully to the CEO's presentation so you can understand the expectations of the company. After you successfully complete each task the CEO may give you more directions on completing the next task.

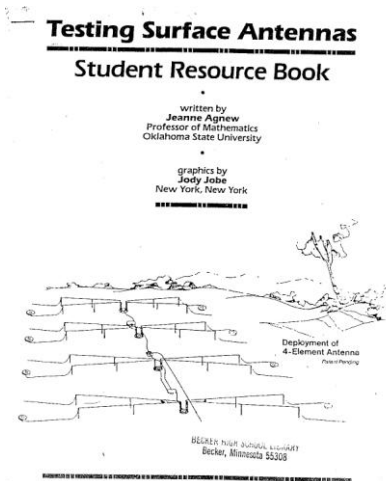
Task #1 involves solving the specific cases given to you by the antenna company. Task #2 requires you to develop a general solution to the problem. This means the company should be able to give you any inputs and your company should be able to provide the solutions. In Task #3 the antenna company will give you special cases of the helicopters position. You may have taken care of this in Task #2. To complete Task #4 you will develop an Excel spreadsheet for your step-by-step general solution. This task could possibly be completed while doing Task #2. A printout of each of the cases from Task #1 and #3 must be included to show a properly functioning spreadsheet.

Task #5 will involve developing your general solution to handle a change in the height of the helicopter, the height of the beacon and most importantly the location of the antenna. In the previous tasks the height of the helicopter, beacon and antenna position are fixed.

To help alleviate some of the stress involved with this project the CEO of the company may confirm whether your answers to Task #1 are correct. The project requires the use of trigonometry and solutions may be arrived at in different manners, but one specific way can handle the specific, general and special cases.

****Make sure and ask questions on Wednesday and Thursday, the CEO will be out of town after that!****

TESTING SURFACE ANTENNAS PROJECT 2007



GOAL: Apply the knowledge of trigonometry and algebra to solve a complicated three-dimensional problem and report out the findings while working in groups.

I. Teams

Each team will consist of 2-3 individuals

II. Overview

You are a member of a design team for a company that has been approached by the antenna company to develop a plan to interpret the data received from the testing of their antenna. You will be tasked to solve problems given specific data cases and then develop a process to solve the problem given any data input.

III. Timeline

Wednesday, April 25 th :	Resource books handed out and project introduced by Mr. Duhrkopf
Thursday, April 26 th :	Project Teams assigned
April 26 th – May 3 rd :	In-Class problem solving
Friday, May 4 th :	Project completed

IV. Grading

This project is worth 140 pts in the test category

Task #1:

Case A: 20 pts - 5 solution/5 trying/10 presentation
Case B: 20 pts
Case C: 20 pts
Case D: 20 pts

Task #2:

General Case: 20 pts

Task #3:

Special Cases: 20 pts

Task #4:

Spreadsheet: 20 pts

Task #5:

Changing Positions: 20 pts

***The company who completes each task first and is within the standards wanted by the CEO will receive 2 pts Extra Credit

V. General Information

I am the CEO of the antenna company and I will be available for questions regarding what information I am asking for and providing to you. Questions on how to solve the problem will not be answered and will reflect negatively on your company.

Your company must complete each task and present it to the CEO. The presentation must include the process you went through to solve each task. Diagrams, equations, detailed list of variables and an explanation of the steps in the solution process are some of the things the CEO is looking for in the presentation. Make sure and listen carefully to the CEO's presentation so you can understand the expectations of the company. After you successfully complete each task the CEO may give you more directions on completing the next task.

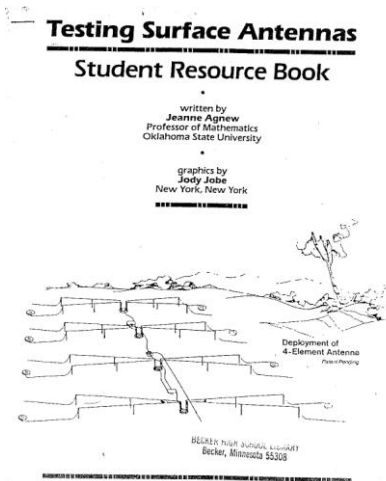
Task #1 involves solving the specific cases given to you by the antenna company. Task #2 requires you to develop a general solution to the problem. This means the company should be able to give you any inputs and your company should be able to provide the solutions. In Task #3 the antenna company will give you special cases of the helicopters position. You may have taken care of this in Task #2. To complete Task #4 you will develop an Excel spreadsheet for your step-by-step general solution. This task could possibly be completed while doing Task #2. A printout of each of the cases from Task #1 and #3 must be included to show a properly functioning spreadsheet.

Task #5 will involve developing your general solution to handle a change in the height of the helicopter, the height of the beacon and most importantly the location of the antenna. In the previous tasks the height of the helicopter, beacon and antenna position are fixed.

To help alleviate some of the stress involved with this project the CEO of the company may confirm whether your answers to Task #1 are correct. The project requires the use of trigonometry and solutions may be arrived at in different manners, but one specific way can handle the specific, general and special cases.

****Make sure and ask questions on Friday and Monday, since the CEO will be out of town after that!****

TESTING SURFACE ANTENNAS PROJECT 2006



GOAL: Apply the knowledge of trigonometry and algebra to solve a complicated three-dimensional problem and report out the findings while working in groups.

I. Teams

Each team will consist of 2-3 individuals

II. Overview

You are a member of a design team for a company that has been approached by the antenna company to develop a plan to interpret the data received from the testing of their antenna. You will be tasked to solve problems given specific data cases and then develop a process to solve the problem given any data input.

III. Timeline

Friday, April 21:	Resource books handed out and project introduced by Mr. Duhrkopf
Monday, April 24:	Project Teams assigned
April 24 – April 28:	In-Class problem solving
Friday, April 29:	Project completed

IV. Grading

This project is worth 140 pts in the test category

Task #1:

Case A: 20 pts - 5 solution/5 trying/10 presentation
Case B: 20 pts
Case C: 20 pts
Case D: 20 pts

Task #2:

General Case: 20 pts

Task #3:

Special Cases: 20 pts

Task #4:

Spreadsheet: 20 pts

Task #5:

Changing Positions: 20 pts

***The company who completes each task first and is within the standards wanted by the CEO will receive 2 pts Extra Credit

V. General Information

I am the CEO of the antenna company and I will be available for questions regarding what information I am asking for and providing to you. Questions on how to solve the problem will not be answered and will reflect negatively on your company.

Your company must complete each task and present it to the CEO. The presentation must include the process you went through to solve each task. Diagrams, equations, detailed list of variables and an explanation of the steps in the solution process are some of the things the CEO is looking for in the presentation. Make sure and listen carefully to the CEO's presentation so you can understand the expectations of the company. After you successfully complete each task the CEO may give you more directions on completing the next task.

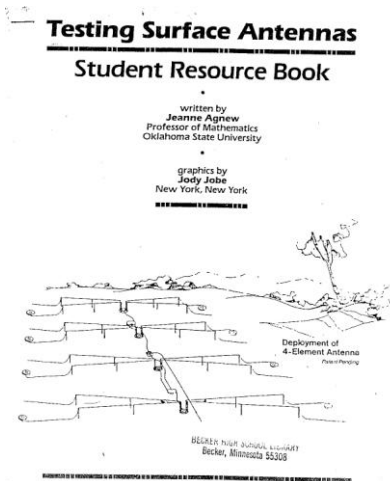
Task #1 involves solving the specific cases given to you by the antenna company. Task #2 requires you to develop a general solution to the problem. This means the company should be able to give you any inputs and your company should be able to provide the solutions. In Task #3 the antenna company will give you special cases of the helicopters position. You may have taken care of this in Task #2. To complete Task #4 you will develop an Excel spreadsheet for your step-by-step general solution. This task could possibly be completed while doing Task #2. A printout of each of the cases from Task #1 and #3 must be included to show a properly functioning spreadsheet.

Task #5 will involve developing your general solution to handle a change in the height of the helicopter, the height of the beacon and most importantly the location of the antenna. In the previous tasks the height of the helicopter, beacon and antenna position are fixed.

To help alleviate some of the stress involved with this project the CEO of the company may confirm whether your answers to Task #1 are correct. The project requires the use of trigonometry and solutions may be arrived at in different manners, but one specific way can handle the specific, general and special cases.

****Make sure and ask questions on Friday and Monday, since the CEO will be out of town after that!****

TESTING SURFACE ANTENNAS PROJECT 2005



GOAL: Apply the knowledge of trigonometry and algebra to solve a complicated three-dimensional problem and report out the findings while working in groups.

I. Teams

Each team will consist of 3-4 individuals

II. Overview

You are a member of a design team for a company that has been approached by the antenna company to develop a plan to interpret the data received from the testing of their antenna. You will be tasked to solve problems given specific data cases and then develop a process to solve the problem given any data input.

III. Timeline

Monday, May 16: Resource books handed out and project introduced by Mr. Duhrkopf
Tuesday, May 17: Individual problem solving
Wednesday, May 18: Project Teams chosen
May 19-May 24: Class problem solving
Thursday, May 26: Project solutions presented

IV. Grading

This project is worth 120 pts in the test category

Specific Cases:

Case A: 20 pts - 5 solution/5 trying/10 presentation
Case B: 20 pts
Case C: 20 pts
Case D: 20 pts
General Case: 20 pts
Presentation of solution: 20 pts
Winning Company: 5 pts (Extra Credit)

V. General Information

I am the CEO of the antenna company and I will be available for questions regarding what information I am asking for and providing to you. Questions on how to solve the problem will not be answered and will reflect negatively on your company.

Your company will be given 10 minutes to give your presentation and 5 minutes for questions and analysis. Going beyond 10 minutes will reflect negatively on your company. The presentation may be done using PowerPoint or any other method. Let the CEO know what you will need to complete your presentation. The presentation should focus on how you developed your general solution rather than a summary of the specific cases.

Using a spreadsheet to develop your step-by-step general solution is highly recommended. For the general case I will supply you with some data and you must come up with the solution. Remember you must convince the company that you have an accurate solution and it will handle any data input. There are certain variables in the problem that are fixed, but could be changed in the future. Keep that in mind when developing an excellent general solution.

A model of the test plot could be helpful in your solution and presentation.

A report of your specific case solutions is required and should contain diagrams on how you arrived at your solutions. This will also be very helpful in developing your general case. A detailed glossary of the variables and their labels you used is also required in the specific case report.