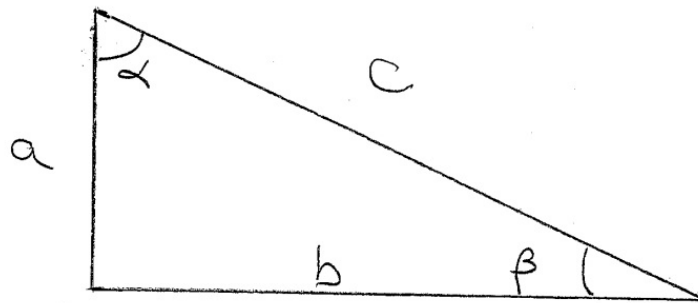


In this assignment you will write several MATLAB scripts. Note that while specific test cases are given, your scripts should work for any valid set of inputs. You should map out your calculations by hand for the last two problems before starting to write your script. Hand in a copy of your scripts and the requested test runs. You can copy all of your files into a single document and print that out.

- 1) (2 pts) Write a script that will ask the user to input an angle in degrees and output the values of the sine, cosine and tangent of the angle.
- 2) (3 pts) Write a script that will ask the user to input the coordinates of a point (x, y) in the x - y plane and outputs the polar coordinates of the point. Test your program for the points $(1, 1)$ and $(-\sqrt{3}, -1)$. Leave the angle in radians.
- 3) (4 pts) Write a script that will ask the user to input the angle α in degrees and the value of a in the right triangle shown below. The script should then compute the values of b, c and β . The value of β should be output in degrees. Test your program for $a = 10, \alpha = 34.5^\circ$.



- 4) (3 pts) A cable hanging under its own weight between two supports looks like a parabola, but it actually assumes the shape of a hyperbolic cosine. In the figure below, a cable is hung between two poles that are equidistant from the y -axis. The height of the cable is above the ground at $x = 0$ is a . The formula for the height of the cable above the ground at any point x is given by

$$y = a + \frac{H}{w} \cosh\left(\frac{wx}{H}\right)$$

where H is the tension in the cable and w is the weight per unit length of the cable. Write a script that will ask the user to input values for a, x, H and w and computes the height of the cable above the ground. Test your script for $x = 2, a = 10, H = 200, w = 3$.

