SI Week 3: Right Triangle Trig and Circular Trig

1. 1. In the figure below, Δ*XYZ ~* Δ*CAB*. Find tan(A), sin(A), and cos(A).

A picture containing polygon

Description automatically generated

* 1. In the figure below, Δ*XYZ* ~ Δ*BAC*. Find Sin(C), tan(C), and cos(C)

Chart

Description automatically generated with low confidence

1. Read the following word problems and determine the asked value (**Hint: Draw a picture)**
   1. Looking up, Brian sees 2 hot air balloons in the sky. He determines that the lower, red hot air balloon is 515 meters away, at an angle of 15° from vertical. The higher, blue hot air balloon is 840 meters away, at an angle of 22° from the vertical. How much higher is the blue balloon than the red one?
   2. A surveyor wants to know the length of a tunnel built through a mountain. According to his equipment, he is located 340 meters from the one entrance of the tunnel, at an angle of 58° to the perpendicular. Also according to his equipment, he is 193 meters from the other entrance of the tunnel at an angle of 21° to the perpendicular. Based on these measurements, find the length of the whole tunnel.
2. The following questions ask about a point on the unit circle
   1. Suppose that is a point in Quadrant 3 on the unit circle. Find the exact value of y.
   2. Suppose that is a point in Quadrant 2 on the unit circle. Find the exact value of x.
3. Find the following values of the trigonometric identities
   1. Let θ be an angle such that and . Find the exact values of tan(θ) and sec(θ)
   2. Let θ be an angle such that and . Find the exact values of tan(θ) and cos(θ)