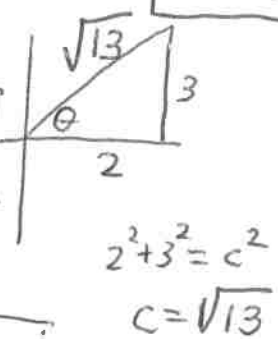


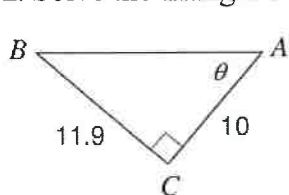
key

1. If $\tan \theta = \frac{3}{2}$, find the remaining 5 trigonometric ratios.

$\sin \theta = \frac{3}{\sqrt{13}} = \frac{3\sqrt{13}}{13}$
 $\sec \theta = \frac{\sqrt{13}}{2}$
 $\csc \theta = \frac{\sqrt{13}}{3}$
 $\cot \theta = \frac{2}{3}$
 $\cos \theta = \frac{2}{\sqrt{13}} = \frac{2\sqrt{13}}{13}$

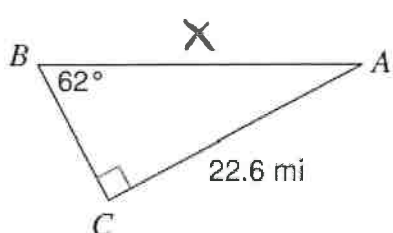


2. Solve the triangle below. Round answers to the nearest tenth.



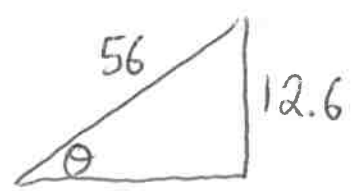
$\tan \theta = \frac{11.9}{10}$
 $\angle B = 90 - 49.9 = 40.1^\circ$
 $\theta = \tan^{-1}\left(\frac{11.9}{10}\right)$
 $\overline{AB} \rightarrow 10^2 + 11.9^2 = c^2$
 $c = 15.5$
 $\theta = 49.9^\circ$
 $\overline{AB} = 15.5$

3. Solve the triangle below. Round answers to the nearest tenth.



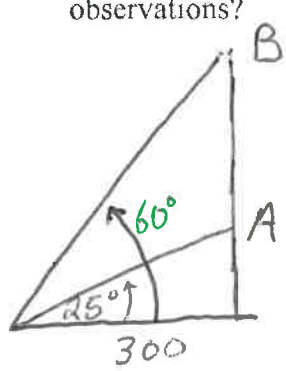
$\frac{\sin 62}{1} = \frac{22.6}{x}$
 $BC \rightarrow a^2 + 22.6^2 = 25.6^2$
 $x \sin 62 = 22.6$
 $a = 12.02$
 $\overline{BC} = 12.02$
 $x = \frac{22.6}{\sin 62} = 25.6$
 $\angle A = 90 - 62 = 28^\circ$

4. A jet takes off and travels 56 miles to achieve an altitude of 12.6 miles. What is the angle of elevation for the jets path?

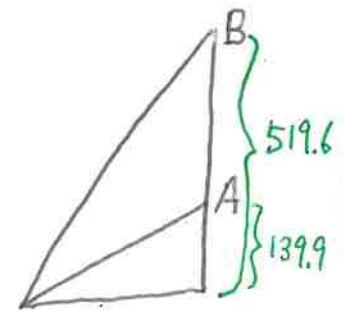


$\sin \theta = \frac{12.6}{56}$
 $\theta = 13^\circ$
 $\theta = \sin^{-1}\left(\frac{12.6}{56}\right)$

5. At 10:00 am, a person observes a hot air balloon climbing vertically in the air from a point 300 meters away from the launch pad for the balloon. The angle of elevation to the top of the balloon at this time is 25° . At 10:02am, the person observes that the angle of elevation to the balloon is now 60° . What is the change in altitude, to the nearest meter, for the balloon over the 2 minutes between the first and second observations?



$\tan 25 = \frac{x}{300}$
 $\tan 60 = \frac{y}{300}$
 $x = 300 \tan 25$
 $y = 300 \tan 60$
 $x = 139.9m$
 $y = 519.6m$



Difference in altitude is
 $519.6 - 139.9 =$
 $379.7m$