Geometry - Trig Review

Make sure your calculator is in DEGREES!!

For questions 1-3, find the sine, cosine, and tangent of the given angle. Round all answers to four decimal places.

1) $30^\circ$  
   $\sin = 0.5$  
   $\cos = 0.8660$  
   $\tan = 0.5774$

2) $120^\circ$  
   $\sin = 0.8660$  
   $\cos = -0.5$  
   $\tan = -1.7321$

3) $85^\circ$  
   $\sin = 0.9962$  
   $\cos = 0.0872$  
   $\tan = 11.4301$

For questions 4-6, let $A$ be an acute angle in a right triangle. Approximate the measure of angle $A$ to the nearest tenth of a degree.

4) $\sin A = \frac{\sqrt{2}}{2}$  
   $A = \sin^{-1} \left( \frac{\sqrt{2}}{2} \right)$
   $A = 45$

5) $\cos A = 0.5592$  
   $A = \cos^{-1} (0.5592)$
   $A = 56.0$

6) $\tan A = 1.0575$  
   $A = \tan^{-1} (1.0575)$
   $A = 46.0.0$

For questions 7-8, list the exact values of the three basic trigonometric functions for $\angle C$.

7) \[ \begin{align*} 
   \sin C &= \frac{30}{50} \\
   \cos C &= \frac{40}{50} \\
   \tan C &= \frac{30}{40} 
\end{align*} \]

8) \[ \begin{align*} 
   \sin C &= \frac{15}{39} \\
   \cos C &= \frac{36}{39} \\
   \tan C &= \frac{15}{36} \]
For questions 9-14, solve the right triangle. Round all answers to the nearest tenth. SHOW ALL OF YOUR WORK!

9) \[ \sin A = \frac{5}{11} \]
   \[ A = \sin^{-1}\left(\frac{5}{11}\right) \]
   \[ A = 27 \]

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   \[ A = \sin^{-1}\left(\frac{5}{11}\right) \]
   \[ A = 27 \]

   \[ c = 11.2 \]
   \[ c^2 = 9.6 \]
   \[ c = 9.8 \]

10) \[ \angle G = 360.8 \]
    \[ \cos 53.2 = \frac{14}{h} \]
    \[ h = \frac{14}{\cos 53.2} \]
    \[ h = 23.4 \]

   \[ \tan 53.2 = \frac{14}{h} \]
   \[ j = 14\tan 53.2 \]
   \[ j = 18.7 \]

11) \[ \angle K = 180 - 90 - 40 \]
    \[ \angle K = 50 \]
    \[ \sin 40 = \frac{m}{8} \]
    \[ m = 8\sin 40 \]
    \[ m = 5.1 \]

12) \[ \cos A = \frac{7}{12} \]
    \[ A = \cos^{-1}\left(\frac{7}{12}\right) \]
    \[ A = 54.3 \]

   \[ \angle C = 180 - 90 - 54.3 \]
   \[ \angle C = 35.7 \]

   \[ a^2 + 7^2 = 12^2 \]
   \[ a^2 = 95 \]
   \[ a = 9.7 \]
For questions 15-20, solve the triangle. Round all answers to the nearest tenth. SHOW ALL OF YOUR WORK!

15) \[ \angle A = 79.2 \quad \angle B = 46.0 \quad \angle C = 54.2 \]

16) \[ \angle A = 80.9 \quad \angle B = 43.1 \quad \angle C = 54.2 \quad a = 20.2 \]
17) \[ \frac{\sin 131}{10} = \frac{\sin C}{7} \]
\[ \sin C = \frac{7 \sin 131}{10} \]
\[ C = \sin^{-1} \left( \frac{7 \sin 131}{10} \right) \]
\[ C = 31.9 \text{ or } 148.1 \]
\[ \angle B = 180 - 131 - 31.9 \]
\[ \angle B = 17.1 \]

\[ m \angle B = 17.1 \]
\[ m \angle C = 31.9 \]
\[ b = 3.9 \]

18) \[ \frac{\sin 73}{34} = \frac{\sin 65}{a} \]
\[ a \sin 73 = 34 \sin 65 \]
\[ a = \frac{34 \sin 65}{\sin 73} \]
\[ a = 23.8 \]
\[ \frac{\sin 73}{34} = \frac{\sin 65}{b} \]
\[ b = \frac{34 \sin 65}{\sin 73} \]
\[ b = 32.2 \]

19) \[ \frac{\sin 95}{43} = \frac{\sin 24}{a} \]
\[ a \sin 95 = 43 \sin 24 \]
\[ a = \frac{43 \sin 24}{\sin 95} \]
\[ a = 17.6 \]

\[ \angle C = 180 - 24 - 95 \]
\[ \angle C = 95 \]

\[ m \angle C = 95 \]
\[ a = 17.6 \]
\[ b = 37.8 \]

20) \[ \frac{\sin 135}{21.4} = \frac{\sin A}{15} \]
\[ A = \sin^{-1} \left( \frac{15 \sin 135}{21.4} \right) \]
\[ A = 29.7 \]
\[ \angle B = 180 - 29.7 - 135 \]
\[ \angle B = 15.3 \]

\[ \angle A = 29.7 \]
\[ m \angle B = 15.3 \]
\[ c = 21.4 \]
For questions 21-23, find the area of each polygon. Round all answers to the nearest hundredth and be sure to include units in your answer. SHOW ALL OF YOUR WORK!

21) \[ A = \frac{1}{2}(8 \times 3) \sin 98^\circ \]
\[ A = 11.88 \text{ yd}^2 \]

22) \[ 20^2 = 10^2 + 17^2 - 2(10)(17) \cos X \]
\[ 400 = 389 - 340 \cos X \]
\[ 11 = -340 \cos X \]
\[ \frac{11}{-340} = \cos X \]
\[ X = \cos^{-1}\left(\frac{11}{-340}\right) \]
\[ X = 91.8540^\circ \]
\[ A = \frac{1}{2}(10)(17) \sin 91.8540^\circ \]
\[ A = 84.96 \text{ m}^2 \]

23) \underline{Triangle} \]
\[ A = \frac{1}{2}(8)(14) \sin 60^\circ \]
\[ = 48.4974 \]

\underline{Parallelogram} = 2 \times \text{Triangle} \]
\[ = 2(48.4974) \]
\[ = 96.99 \text{ units}^2 \]