Math 165 Homework 9

1. Plot the point \(A(0, 0)\) and \(B(12, 0)\). A third point \(C\) in the first quadrant makes angles \(\angle ABC = 105^\circ\) and \(\angle BAC = 30^\circ\).
   a) Find an equation of the line containing \(A\) and \(C\).

2. Plot the point \(A(2, 1)\) and \(B(6, 1)\). A third point \(C\) in the first quadrant makes angles \(\angle ABC = 75^\circ\) and \(\angle BAC = 60^\circ\).
   a) Find an equation of the line containing \(A\) and \(C\).

3. Plot the point \(A(1, 2)\) and \(B(9, 2)\). A third point \(C\) in the first quadrant makes angles \(\angle ABC = 120^\circ\) and \(\angle BAC = 30^\circ\).
   a) Find an equation of the line containing \(A\) and \(C\).

4. Let \(\cos(A) = -\frac{24}{25}\), \(\tan(B) = \frac{4}{3}\), \(90^\circ < A < 180^\circ\), and \(180^\circ < B < 270^\circ\).
   Evaluate the trigonometric expressions.
   a) \(\cos(A + B)\)
   b) \(\tan(A - B)\)

5. Evaluate \(\tan\left(\frac{\pi}{12}\right)\). Apply a sum or difference identity for tangent.