1. Let $\cos(A) = \frac{8}{17}$ where $\frac{3\pi}{2} < A < 2\pi$. Then evaluate $\cos(2A)$ and $\sin(2A)$. 

2. Let $A = \frac{\pi}{3}$, and let $\tan(B) = \frac{15}{8}$. Then evaluate $\tan(A - B)$. 

3. Plot the points $A(0, 1)$ and $B(4, 1)$. A point $C$ in the first quadrant makes the angles $\angle ABC = 75^\circ$ and $\angle BAC = 60^\circ$.

   (a) Find an equation of the line containing $A$ and $C$.
   (b) Determine the perpendicular distance from $C$ to the line segment $AB$.
   (c) Determine the $y$-coordinate of point $C$.
   (d) Determine the area of triangle $\triangle ABC$.

4. Plot the points $A(3, 1)$ and $B(9, 1)$. A point $C$ in the first quadrant lies above the line containing $A$ and $B$, and makes angles $\angle ABC = 120^\circ$ and $\angle BAC = 45^\circ$.

   (a) Find an equation of the line containing $A$ and $C$.
   (b) Determine the $y$-coordinate of point $C$.
   (c) Determine the area of triangle $\triangle ABC$.

5. Find the slope-intercept form of the line that passes through the pair of points.

   (a) $\left(\frac{3}{4}, \frac{2}{3}\right)$ and $\left(\frac{3}{4}, \frac{1}{3}\right)$
   (b) $(\cos(\frac{2\pi}{3}), \sin(\frac{2\pi}{3}))$ and $(\cos(\frac{\pi}{3}), \sin(\frac{\pi}{3}))$

6. Sketch the pair of lines. Then determine the point of intersection of the two lines.

   (a) $y = -\frac{3x}{2} + \frac{1}{2}$ and $y = \frac{1}{2}x - 4$
   (b) $\frac{x}{3} + \frac{3y}{2} = 2$ and $\frac{1}{2}x - \frac{1}{3}y = -1$

7. Solve each equation for $x$ satisfying $0 \leq x < 2\pi$.

   (a) $5\tan^2(x) = 125$
   (b) $16\sin(x) = \frac{1}{2}$
   (c) $\log_6(\tan(x)) = \frac{1}{4}$
   (d) $\log_3(\cos(x)) - \log_3(\sin(x)) = \frac{1}{2}$
   (e) $\log_2(\sin(x)) + \log_2(\cot(x)) = -1$
   (f) $\log_8(\cot(x)) + \log_8(\sec(x)) = \frac{1}{3}$

8. Solve the equation.

   (a) $\log_{27}(3x + 3) - \log_{27}(x - 3) = \log_{27}(9)$
   (b) $\log_8(2x + 1) + \log_8(x - 1) = \log_8(2)$

9. Let $f(x) = \frac{2x - 3}{4x + 1}$.

   (a) Evaluate $f(\frac{1}{3})$.
   (b) Solve $f(x) = -\frac{2}{3}$.
   (c) Solve $f(\sin(A)) = -\frac{2}{3}$ where $0 \leq A < 2\pi$.
   (d) Evaluate $\lim_{h \to 0} \frac{f(x + h) - f(x)}{h}$. 


10. Let $y = \frac{1}{2}x^2 - x - \frac{3}{2}$
   
   (a) Find the coordinates of the $x$-intercepts of the parabola.
   
   (b) Find the coordinates of the vertex of the parabola.
   
   (c) Sketch the parabola.

11. Plot the points $A(2, 3)$, $B(4, 3)$, and $C(3, 3 + \sqrt{3})$.
   
   (a) Find an equation of the parabola that contains the points $A$, $B$, $C$.
   
   (b) Determine the measurement of angle $\angle ABC$.

12. Solve $p(x) = 0$ given the indicated information. Apply long division.
   
   (a) $p(x) = 6x^3 + 5x^2 - 2x - 1$, and $p(-1) = 0$
   
   (b) $p(x) = 2x^3 + 3x^2 - 11x - 6$, and $p(-\frac{1}{2}) = 0$