Section 8-1
Solving Trig equations

- Solve: \( \cot^2 \theta = 4 \) for \( 0^\circ \leq \theta \leq 360^\circ \)
  \[ \cos \theta = \pm 2 \]
  \[ \tan \theta = \pm \frac{1}{2} \]

- \( \tan \theta = \frac{1}{2} \)
  \( \theta \approx \tan^{-1}(0.5) \)
  \( \theta \approx 26.565^\circ, 206.565^\circ \)

- Solve: \( 3 \sin \theta + 8 = 7 \) for \( 0^\circ \leq \theta \leq 360^\circ \)
  \[ 3 \sin \theta = -1 \]
  \[ \sin \theta = -\frac{1}{3} \]
  \( \theta = \sin^{-1}(-\frac{1}{3}) \approx -19.47^\circ \)
  \( \theta \approx 199.47^\circ, 340.529^\circ \)

- Solve: \( 2 \csc x = 8 \) for \( 0 \leq \theta \leq 2\pi \)
  \[ \csc x = \frac{7}{2} \]
  \[ \sin x = \frac{2}{7} \]
  \[ x = \sin^{-1}(0.35) \approx 0.358, 2.784 \]

- Solve: \( 2 \cot x + 2 = 0 \) for \( 0 \leq \theta \leq 2\pi \)
  \[ \cot x = -3 \]
  \[ \tan x = -\frac{1}{3} \]
  \( x = \tan^{-1}(-\frac{1}{3}) \approx -0.322 \)
  \( x \approx 2.820, 5.961 \)
Section 8-1
Inclination and finding the equation of a line.

- If inclination = 30°, then \( m = \frac{1}{\sqrt{3}} \approx 0.577 \)
  
  With y-intercept of 2, the equation of the line is \( y = \frac{\sqrt{3}}{3} x + 2 \) or \( y \approx 0.577x + 2 \)

- If inclination = 60°, then \( m = \sqrt{3} \approx 1.732 \)
  
  If the line passes through (2,3) then the equation of the line is \( y - 3 = \sqrt{3}(x-2) \) or \( y - 3 = 1.732(x-2) \)

\[
y = \sqrt{3} x + 3 - 2\sqrt{3}
\]

- If inclination = 45°, then \( m = \frac{1}{1} = 1 \)
  
  Given a y-intercept of -4, the equation of the line is \( y = x - 4 \)

- If inclination = 147°, then \( m = -0.649 \)
  
  If the line passes through (-6,8) then the equation of the line is \( y - 8 = -0.649(x + 6) \)