Write your **Name, PID, and Discussion Section**, on the cover of your bluebook.

• No calculators or other electronic devices are allowed during this exam.
• You may use one page of notes front and back, but no books or other materials.
• Write your solutions in your bluebook clearly and in order.
• Follow any instructions written on the board.
• Show all of your work. No credit will be given for unsupported answers.

(0) Carefully **read** and **follow** the above instructions.

(1) Find the set of values (using interval notation) that satisfies, \( |x - 6| < 1 \).

(2) Give an equation that represents all points, \((x,y)\), that are a distance of 3 from the point \((2,-1)\).

(3) Consider \( f(x) = -x^2 + 2x - 1 \). What is the maximum possible value of \( f(x) \)?

(4) Evaluate \( 3^\log_3(9) \).

(5) Solve \( \ln(x) - \ln(x^2) = 2 \).

(6) Find \( 0 \leq \theta \leq \pi \) such that \( \cos(\theta) = -\sin(\theta) \).

(7) Let \( \tan(\theta) = 2 \) for \( 0 \leq \theta \leq \frac{\pi}{2} \). Find:
   
   (a) \( \cos(\theta) \)
   
   (b) \( \sin(\theta) \)

(8) (see triangle below) If \( \sin(u) = \frac{1}{2} \) and \( c = 3 \), find \( b \).

(9) Evaluate the following:
   
   (a) \( \cos^{-1}\left(-\frac{\sqrt{3}}{2}\right) \)

   (b) \( \sin^{-1}\left(\sin\left(\frac{4\pi}{3}\right)\right) \)

(10) \( A \cos(ax + b) + B \) has amplitude=3, period=2, and range=[-2,4]. Find \( A > 0 \), \( a > 0 \), and \( B \) that satisfy these properties.