Your first homework is the following problems from an old Math 1010 final exam. Use this as an indicator of your readiness for this course. Use this page as the cover sheet for this homework. Do not solve problems side by side and write on one side of each page. Work neatly.

**INTERMEDIATE ALGEBRA**

Some Final Exam Problems

1. Find the center and radius of the circle \( x^2 + 3x + (y - 1)^2 = \frac{7}{4} \).

2. Graph the compound inequality \( 2y + x \leq 2 \) and \( x - 2y > -4 \).

3. Given that \( \log_b 2 = 0.6 \), \( \log_b 3 = 0.96 \) and \( \log_b 5 = 1.4 \), find \( \log_b \frac{18}{125} \). (Do not try to find \( b \! \) !)

4. Find the equation of the line through the point \((-4, 3)\) and perpendicular to the line \( 2x + 5y = 1 \). Write your answer in the slope-intercept form.

5. Simplify \( \frac{(a^2b^5)^{-\frac{1}{4}}}{(a^{-3}b^{\frac{1}{4}})^6} (a^{-2}b^2)^2 \) completely.

6. Factor \( a^3 + a^2 + 3a(a+1) + 2a + 2 \) completely.

7. Solve \( \frac{1}{x-1} + \frac{1}{x} = \frac{1}{x(x-1)} \).

8. Solve \( \sqrt{x-9} = \sqrt{x} - 1 \).

9. A ball is thrown up from the height of 32 ft with the initial velocity of 48 ft/sec. The distance, \( h \) feet, of this ball from the ground at the time \( t \) seconds is given by \( h(t) = -16t^2 + 48t + 32 \). Find the maximum distance of this ball from the ground and the time this ball hits the ground.

10. A police cruiser starts chasing a car one minute after the car passes its position and it records its speed to be 75 mi/hr. If the speed of the police cruiser is 87 mi/hr, then how many minutes will it take for it to catch up with the car?