Math 201 quiz 8 Version B

No calculators! No notes or books! No collaborations! Show your work!

1. (4pts) Match the solution region of the system of linear inequalities $2x + y \geq 16$ with one of the four regions shown in the figure. Also identify the corner points.

\[ x + 3y \leq 18 \]

\[ x, y \geq 0 \]

\[ (0, 16) \]

\[ (0, 6) \]

\[ (6, 4) \]

\[ (18, 0) \]

\[ (8, 0) \]

\[ (0, 0) \]

\[ 2x + y = 16 \]

\[ x + 3y = 18 \]

2. See costs for a farmer are $45 per acre for corn and $35 per acre for soybeans. How many acres of each crop should the farmer plant if he wants to spend less than $5,800 on seed? **Set up only. Do not solve.**

a. (2pts) Define the variables;

\[ x \] — # acres of corn

\[ y \] — # acres of soybean

b. (5pts) Write ALL the inequalities, including nonnegative restrictions.

\[ 45x + 35y < 5,800 \]

\[ x, y \geq 0 \]
3. Given the system of linear inequalities:
   \[ \begin{align*}
   2x + 3y & \leq 24 \\
   x + 3y & \geq 15
   \end{align*} \]

   a. (6pts) Solve graphically and shade the feasible region;

   ![Graph with shaded region]

   b. (1pt) Indicate whether the solution region is bounded or unbounded;

   ![Circle indicating bounded]

   c. (2pts) Find the coordinates of each corner point.

   \[ \begin{align*}
   2x + 3y &= 24 \\
   \quad -1(x + 3y &= 15) \\
   \hline
   \quad x &= 9 \\
   9 + 3y &= 15, \quad 3y = 6, \quad y = 2
   \end{align*} \]

   ![Corner point (9, 2)]