

**Question 1:**

(a)[2] Determine the slope of the line through  $(-3, 5)$  and  $(2, 5)$  .

(b)[2] Determine the slope of the line through  $(-5, -2)$  and  $(-4, 11)$  .

(c)[3] State the slope and  $y$ -intercept of the line  $4x + 3y = 24$  .

(d)[3] Determine an equation of the vertical line through  $(4, 7)$  .

**Question 2:**

(a)[5] Eight hundred people attend a basketball game, and total ticket sales are \$3102 . If adult tickets are \$6 and student tickets are \$3, determine the number of each type of ticket sold.

(b)[5] Determine an equation of the line through  $(-5, 2)$  and parallel to the line through  $(1, 2)$  and  $(4, 3)$  .

**Question 3:**

(a)[5] In 1995 there were 41,235 shopping centres in the United States. By 2005 there were 48,695. Find a linear equation relating the year  $x$  to the number of shopping centres  $y$ , and use your equation to predict the year in which the number of shopping centres will reach 60,000.

(b)[5] How many pounds of tea worth \$4.60 a pound should be mixed with tea worth \$6.50 a pound to get 10 pounds of blended tea worth \$5.74 a pound?

**Question 4:**

(a)[5] A company manufactures a certain product and sells it for \$550 per unit. The fixed cost is \$213,000 and the cost to produce each unit is \$250. How many units must be produced for the company to break even?

(b)[5] Sugar has supply equation  $p = 1.4S - 0.6$  and demand equation  $p = -2D + k$  where  $k$  is some value. Determine the value of  $k$  if the market price is  $p = 2.9$ .

**Question 5 [10]:** Solve the following system of equations **using either Gaussian or Gauss-Jordan elimination** (no credit will be given for using any other method). Use proper notation to state the row operations used at each step and clearly state the final solution.

$$\begin{aligned}x + y + 13z &= 6 \\x - 2y + 4z &= 6 \\-2x + 6y - z &= -10\end{aligned}$$