

Question 1:

- (a)[3 points] Determine the slope of the line through the points $(-3, 5)$ and $(1, -3)$.
- (b)[2 points] Determine an equation of the line through $(-3, 5)$ and $(1, -3)$. You may state your answer using any of the three standard forms of lines we saw.
- (c)[3 points] Determine the x and y intercepts of the line you found in (b).
- (d)[2 points] Neatly graph the line you found in part (b). Label and show the scale on the axes.

Question 2:

(a)[5 points] Determine the point of intersection of the following pair of lines:

$$3x - 7y = 8$$

$$2x + 4y = -12$$

(b)[5 points] Determine an equation of the line through $(-1, -2)$ which is parallel to the line $\frac{2}{3}x + \frac{1}{3}y = 9$. You may state your equation in any of the standard forms.

Question 3 [10 points]: An investor has \$12,000 to invest and two investments are available. The first investment pays interest at a rate of 5% per year, while the second pays interest at 7% per year. The investor would like to earn a total of \$760 in interest for the year. How much should be invested in each of the investments? Round your answers to the nearest dollar and clearly state your conclusion.

Question 4: Bart and Lisa set up a lemonade stand and sell the drink for \$0.50 per glass. They calculate that it costs them \$0.20 per glass to produce, but they initially have to spend \$20 to build the stand and another \$7 to make their sign.

(a)[5 points] How many glasses of lemonade must be sold before any profit is realized?

(b)[5 points] When Bart and Lisa reach \$100 in total sales they realize that they made a mistake: they have just broken even, which means the \$0.20 per glass production cost was wrong. If total revenue of \$100 corresponds to the true break even point, what must be the correct production cost for each glass of lemonade?

Question 5:

(a)[5 points] Solve the following system of equations and state whether the system is consistent or inconsistent. You may solve using any method you wish.

$$\begin{aligned}3x - y &= 2 \\ -6x + 2y &= 4\end{aligned}$$

(b)[5 points] The following system of equations has exactly one solution. Solve the system using matrix reduction:

$$\begin{aligned}x - 2y + z &= -3 \\ -2y - 2z &= -20 \\ 2y + 3z &= 27\end{aligned}$$