

CHAPTER 13

Test

1. Graph a system of equations that has infinitely many solutions. $y = 2x + 3$
 $2y = 4x + 6$
 2. Explain when you would use elimination with subtraction to solve a system of equations. *when the coefficients of one of the variables are the same*

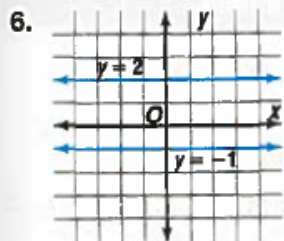
Solve each system of equations by graphing. *see notes*

3. $y = 3$
 $y = x + 4$

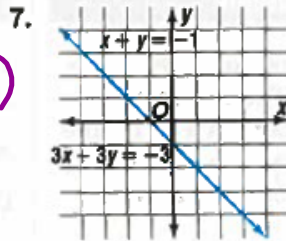
4. $x + y = -2$
 $2x - y = -4$

5. $y = -x^2 - 1$
 $y = -5$

State whether each system is *consistent and independent*, *consistent and dependent*, or *inconsistent*.



inconsistent (no solutions)



consistent and dependent

8. Use graphing to determine whether the system $y = -2x$ and $2x + y = 4$ has *one* solution, *no* solution, or *infinitely many* solutions. If the solution has one solution, name it. *see notes*

Use substitution to solve each system of equations.

9. $y = 3x$
 $x + y = 4$ *(1, 3)*

10. $x + y = -2$
 $x = y + 10$ *(4, -6)*

11. $y = 5x - 3$
 $10x - 2y = -2$ *no solution*

12. $y = x^2 - 15$
 $y = 2x$ *(5, 10), (-3, -6)*

13. $y = 5x + 4$
 $y = x^2 + 5x$ *(-2, -6), (2, 14)*

14. $y = 3x + 2$
 $y = x^2 + 6$ *no solution*

Use elimination to solve each system of equations.

15. $x + y = 5$
 $x - y = -9$ *(-2, 7)*

16. $4x - 5y = 7$
 $x + 5y = 8$ *(3, 1)*

17. $2x - y = 32$
 $y = 60 - 2x$ *(23, 14)*

18. $x + 3y = -1$
 $2x + 4y = -2$ *(-1, 0)*

19. $5x - 2y = 3$
 $15x - 6y = 9$ *infinitely many*

20. $-5x + 8y = 21$
 $10x + 3y = 15$ *(3/5, 3)*

Solve each system of inequalities by graphing. *see notes*

21. $y \leq -3$
 $y > -x - 2$

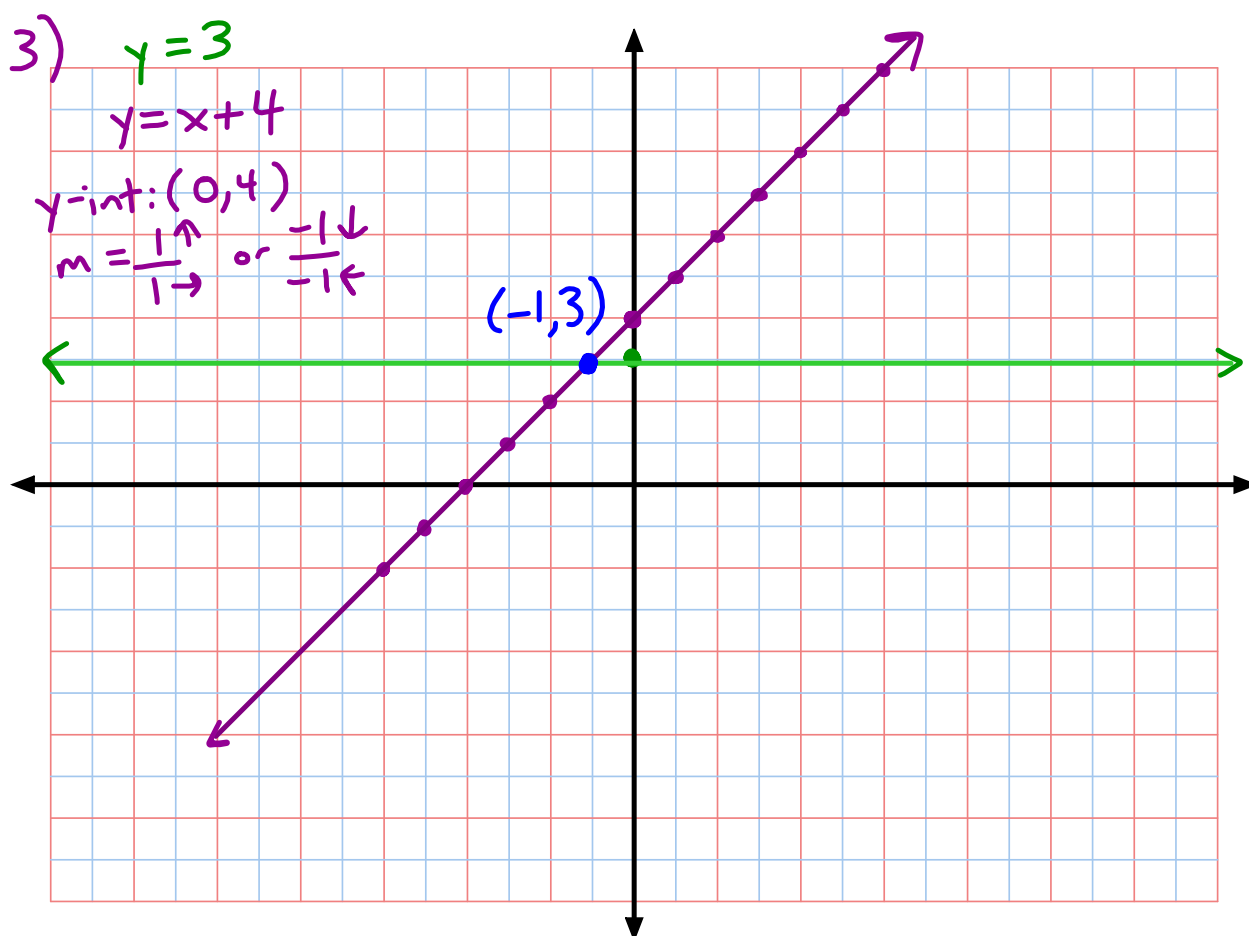
22. $y < x + 4$
 $y > x - 2$

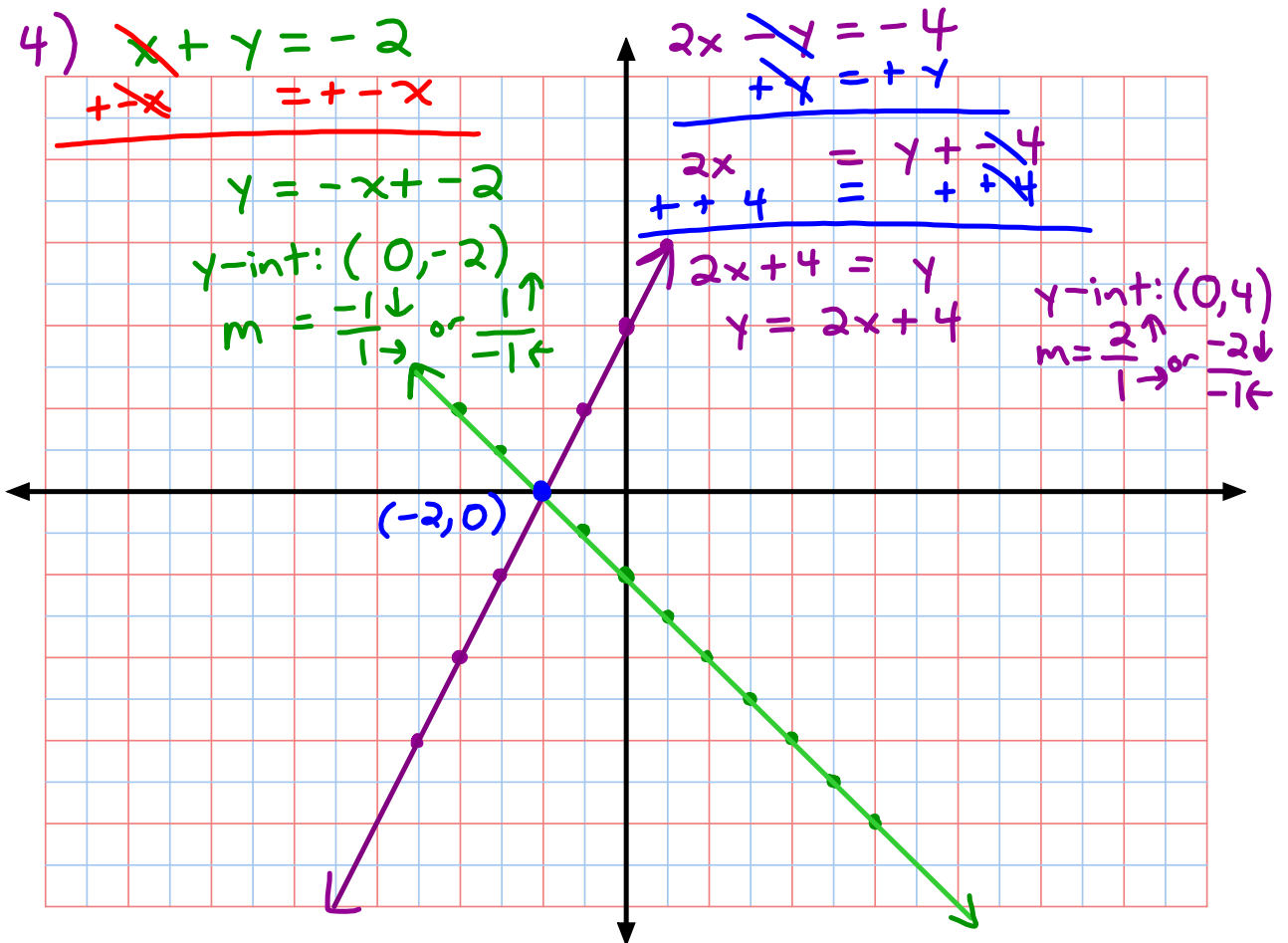
23. $x \leq 2y$
 $2x + 3y \leq 6$

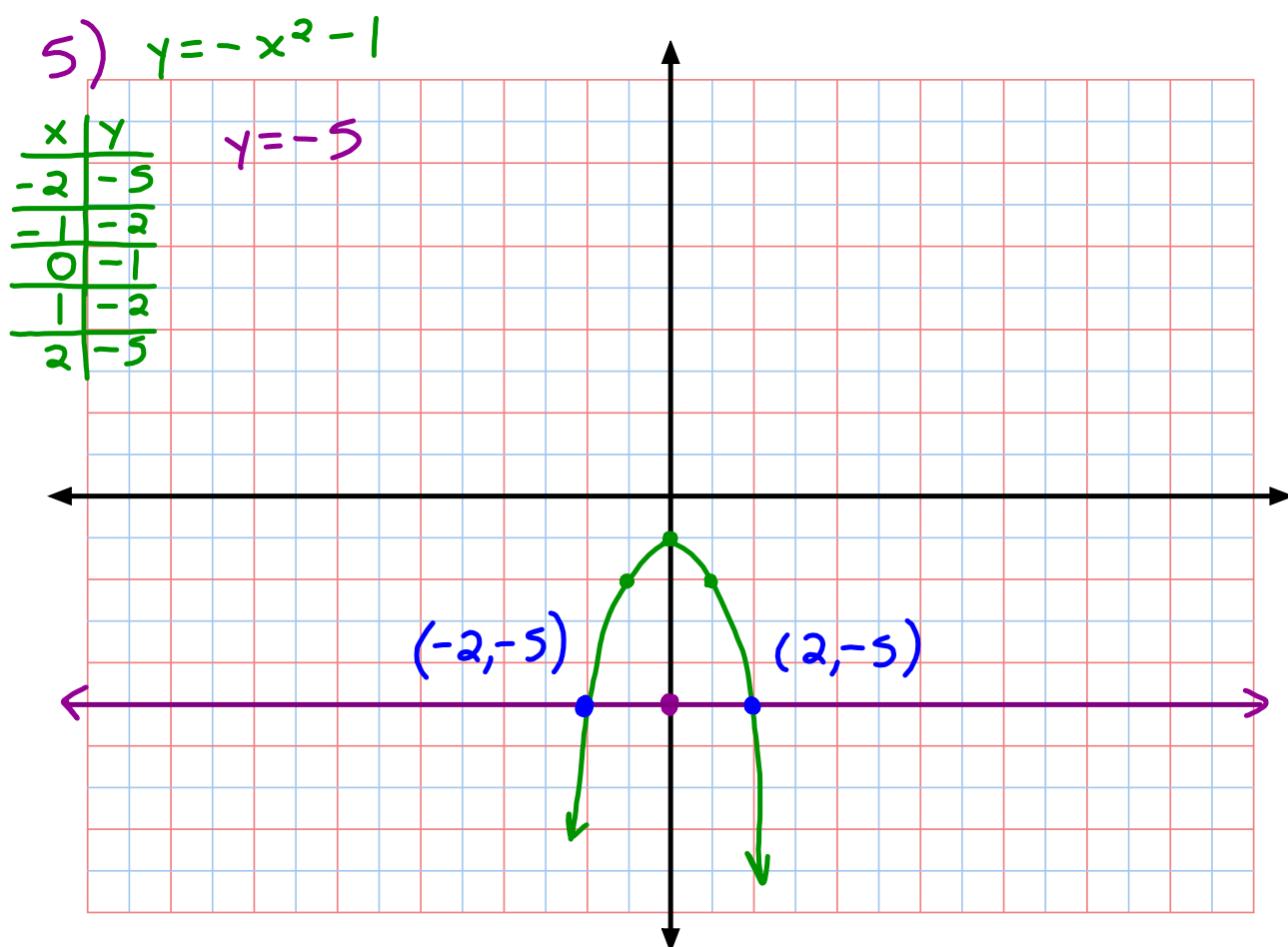
24. Find two numbers whose sum is 64 and whose difference is 42. $\begin{cases} x + y = 64 \\ x - y = 42 \end{cases}$ *x = 53, y = 11*

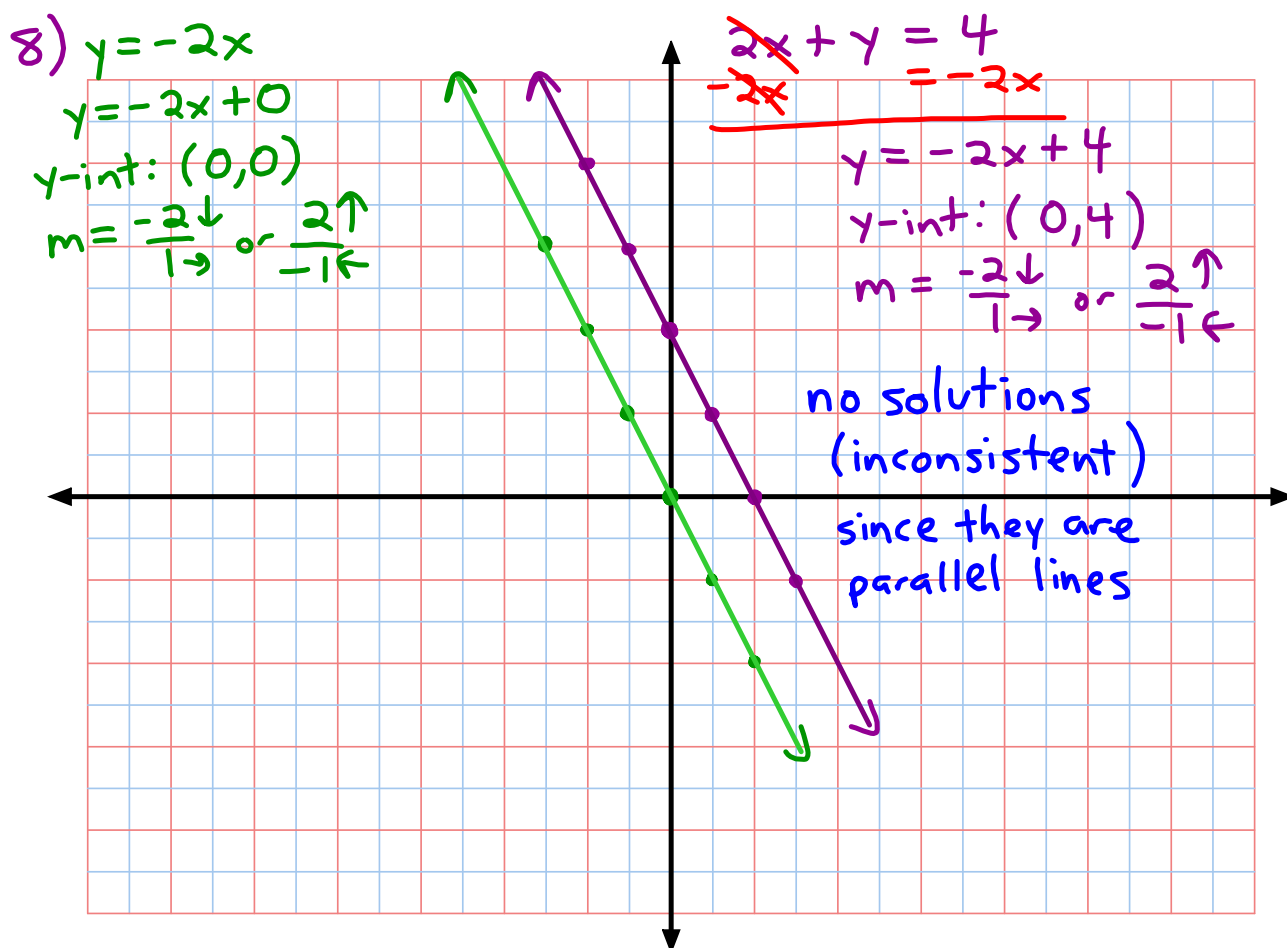
25. **Transportation** Two trains travel toward each other on parallel tracks at the same time from towns 450 miles apart. Suppose one train travels 6 miles per hour faster than the other train. What is the rate of each train if they meet in 5 hours?

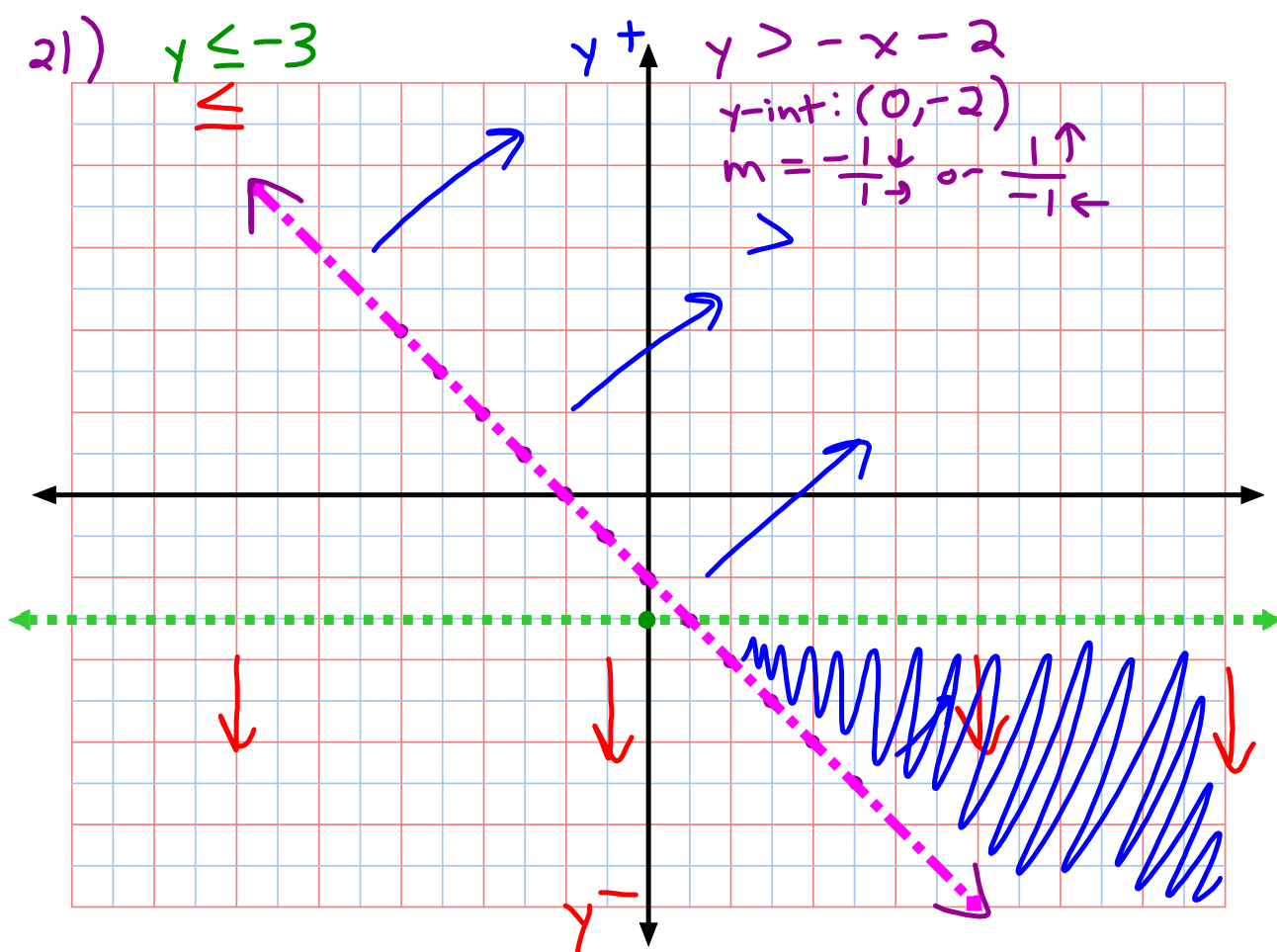


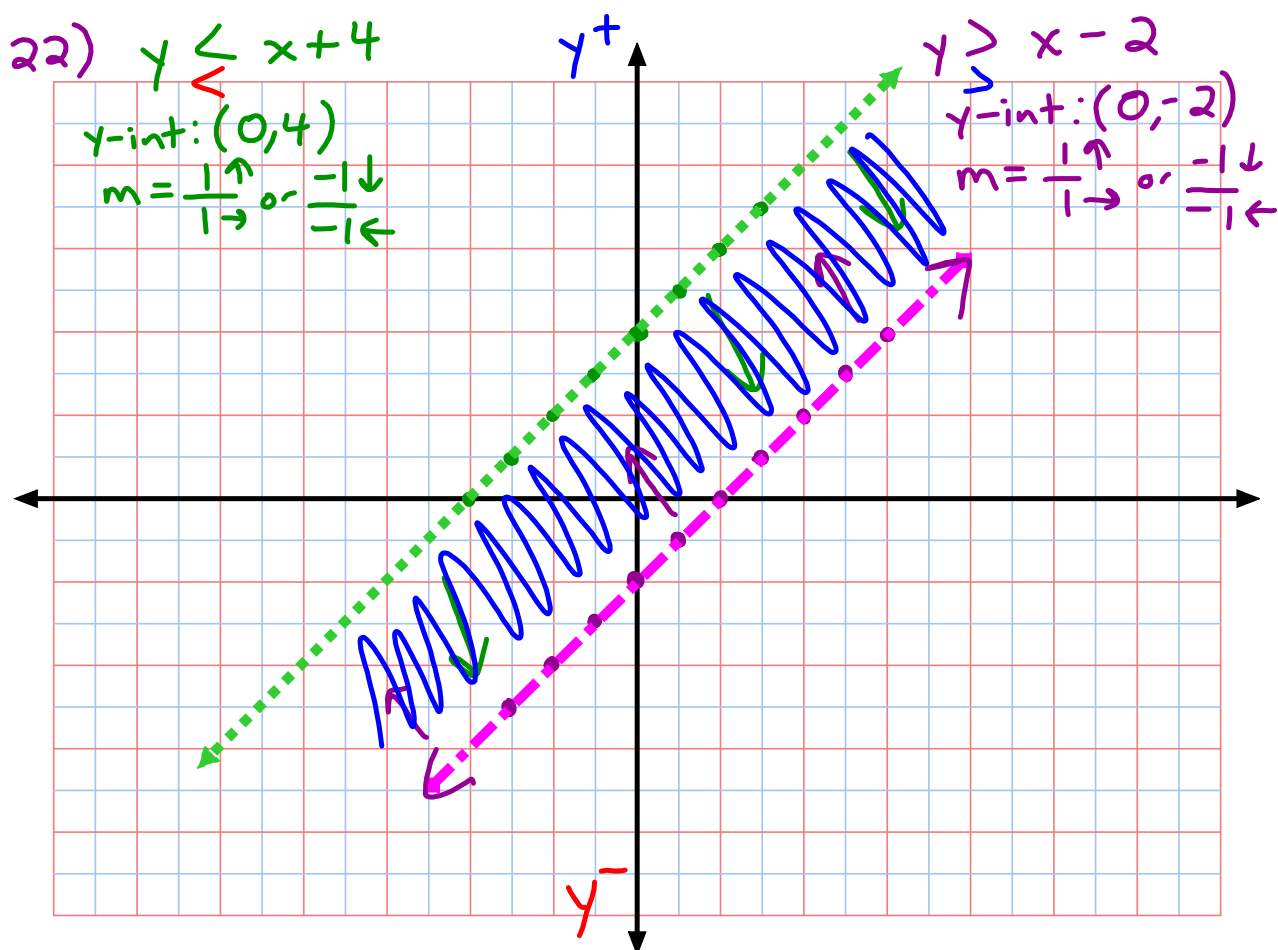


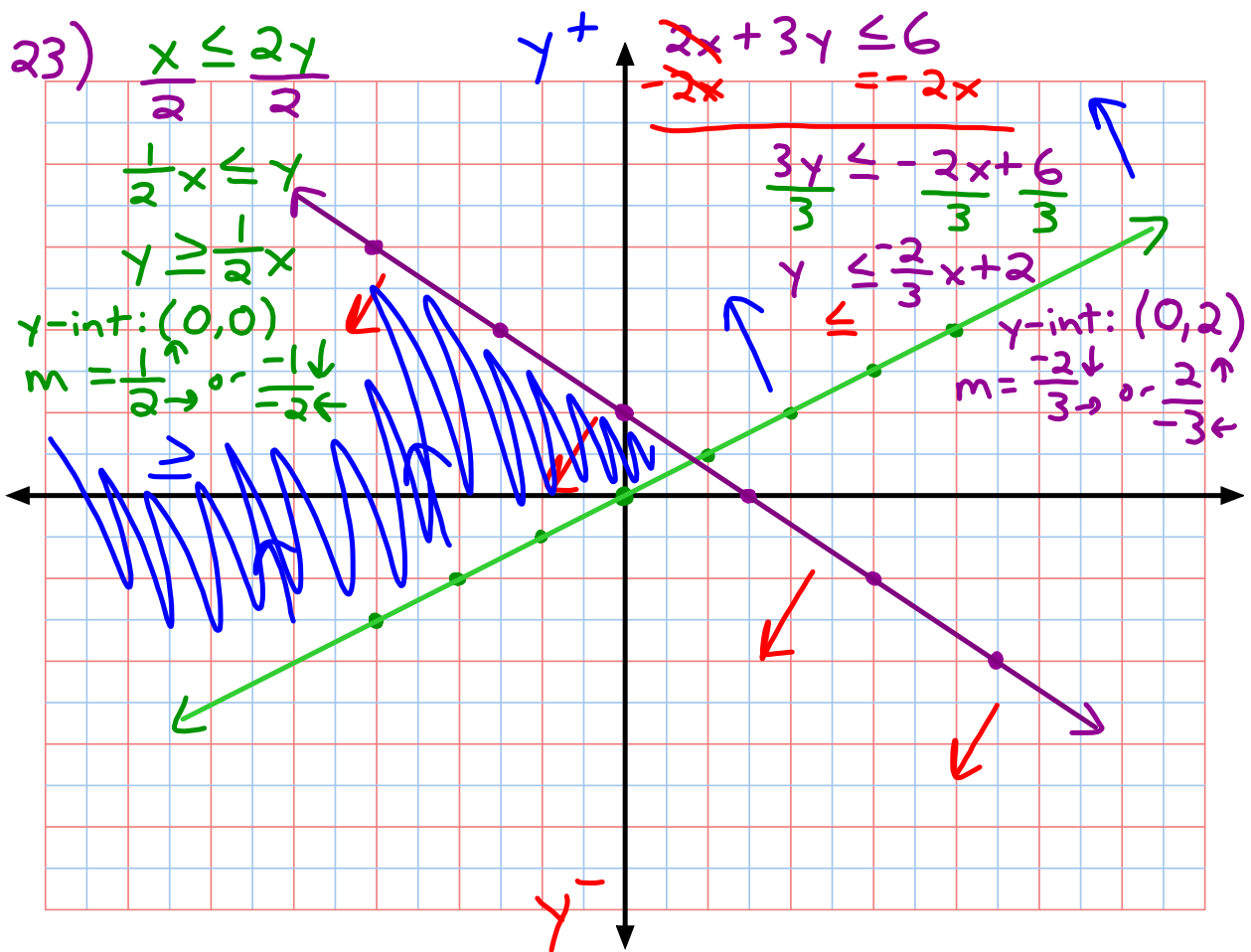












25) distance = rate \times time

$$\begin{cases} d = r \times 5 \rightarrow d = 5r \\ 450 - d = (r + 6) \times 5 \rightarrow 450 - d = 5(r + 6) \end{cases}$$

$$\begin{array}{r} d = 5r \rightarrow 5r \\ + 450 - d = 5(r + 6) \rightarrow 5r + 30 \\ \hline 450 + 0d = 10r + 30 \end{array}$$

$$\begin{array}{r} 450 = 10r + 30 \\ + -30 = + -30 \\ \hline 420 = 10r \\ \underline{10} \quad \underline{10} \end{array}$$

$$42 = r$$

$$r = 42 \text{ mph}$$

$$r + 6 = 48 \text{ mph}$$

42 mph and 48 mph