

Review for Test #1 over Sect 4.1 - 4.4 and 9.4

Work all the problems on a separate piece of paper showing all steps.

Solve the following systems by graphing:

1) $3x - 2y = 5$
 $x + y = 5$

2) $6x - 3y = 9$
 $y = 2x - 3$

3) $y = -\frac{2}{3}x + 4$
 $2x + 3y = 3$

4) $y = -\frac{1}{2}x + 5$
 $y = \frac{2}{3}x - 2$

Solve the following systems by substitution:

5) $x = \frac{2}{3}y + 3$
 $6x + 5y = -9$

6) $x - 2 = 7y$
 $3x + 2y = 25$

7) $2y + x = 9$
 $3x + 6y = 26$

8) $\frac{1}{3}x + \frac{1}{4}y = 6$
 $x = 1$

Solve the following systems by addition:

9) $x + y = 7$
 $x - y = 3$

10) $3x + 4y = -13$
 $5y + 6x = 8$

11) $15x - 10y = 30$
 $\frac{3}{4}x - \frac{1}{2}y = \frac{3}{2}$

12) $4x - 6y = 5$
 $9y - 6x = 2$

Solve the following systems:

13) $-6x + 6y = -7$
 $4x - 4y = 1$

14) $x + 3y = -8$
 $4x - 3y = 23$

Solve the following systems:

15) $2x + y = -6$
 $\frac{2}{3}x - \frac{1}{3}y = -2$

16) $10x - 6y = 4$
 $-1.5x + 0.9y = -0.6$

17) $x + 3y = 9$
 $y = 4$

Solve using Cramer's Rule:

18) $7x - 3y = 1$
 $-3x + 2y = 1$

19) $3x + y = 6$
 $x + \frac{1}{3}y = 5$

20) $x - 4y = -2$
 $0.9x + y = 1$

Evaluate the following:

21) $\begin{vmatrix} -6 & -1 \\ 2 & 3 \end{vmatrix}$

22) $\begin{vmatrix} -46 & -17 \\ 12 & 2 \end{vmatrix}$

Set-up a system of equations and solve the following:

- 23) How many liters of a 30% alcohol solution must be mixed with 120 liters of a 10% alcohol solution to produce a 15% solution?
- 24) At 10 am, Juanita left Houston traveling 56 mph to the east. Three hours later, Elsa left Houston traveling 80 mph to the east. Assuming neither one stops, at what time will Elsa catch up to Juanita?
- 25) The width of a rectangle is four feet less than twice the length. If the perimeter is two feet more than five times the length, find the dimensions.
- 26) Marigold bought some miniature chocolate candy bars and hard candy for a total of \$27. If the chocolates were priced at \$2.25 a pound and the hard candy was priced at \$1.50 per pound and she had a total of 14 pounds of candy, how much did she buy of each?
- 27) Juan is three years less than twice as old as Prissy. Three years ago, Juan was six less than three times as old as Prissy. How old is Juan now?
- 28) Gary is having nerve trouble with his arm. To test the electrical conduction of his nerves, a doctor measures the length from Gary's elbow to his fingertip and finds it to be 0.4318 meters. The doctor then measures the time between the initiation pulse at Gary's elbow and the detection of the pulse at Gary's fingertip and finds that to be 0.01925 seconds.
- Calculate the speed of the pulse.
 - If the normal range is between 50 and 60 meters per second, was the speed of the pulse through Gary's arm in the normal range?

Set-up a system of equations and solve the following:

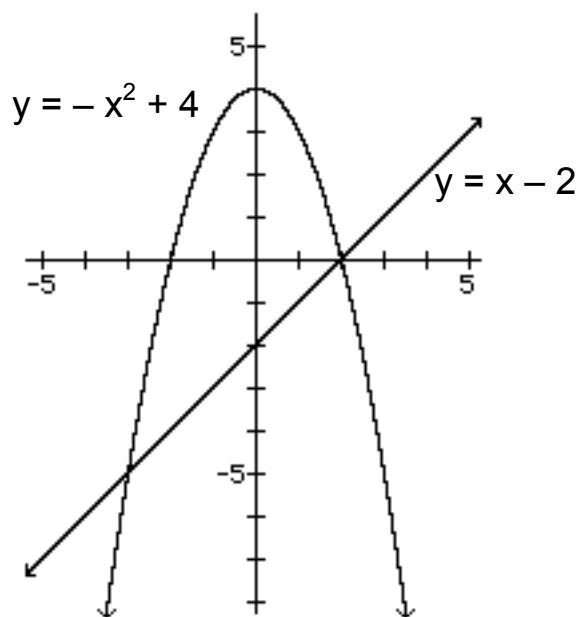
- 29) If the supplement of an angle is ten less than three times the complement of the same angle, find the angle.
- 30) On a particular night, Hollywood Muenster Videos rented a total of 74 videos. If the video rents consisted of children's video at \$2 each and general interest video at \$3.50 each and the total revenue for the night was \$224.50, how many children videos were rented?
- 31) In an Isosceles triangle, the measure of the third angle is four degrees less than twice the measure of one of the other two equal angles. Find the angles.
- 32) Ozzie invested a total of \$9000 on two investments, one earning 8% interest and one losing 3%. If his net earnings from the two investments was \$115, how much money did he have invested in each?
- 33) How many cups of a 15% saline solution and how many cups of a 25% saline solution must a pharmacist mix together to produce 30 cups of a 18% saline solution?
- 34) In flying from Los Angeles to Tokyo, a plane flew into a steady wind of 30 mph and took ten hours to reach its destination. On the return trip to Los Angeles with the wind, the plane covered the same distance in nine hours. What was the plane's speed in still air and what was the distance traveled each way?
- 35) A vending machine has 75 coins, all quarters and dimes. If the total value of the money in the machine is \$13.80, how many quarters and how many dimes are there in the machine?
- 36) Mara bought two pairs of shoes for \$38.45. If the difference in price was \$8.51, how much was each pair?
- 37) In a recent small town election, Evelyn Merriweather received 1096 votes out of 1828 total votes to become the new mayor. If $\frac{4}{7}$ of the women and $\frac{5}{8}$ of the men voted for her, how many men and how many women voted?

Set-up a system of equations and solve the following:

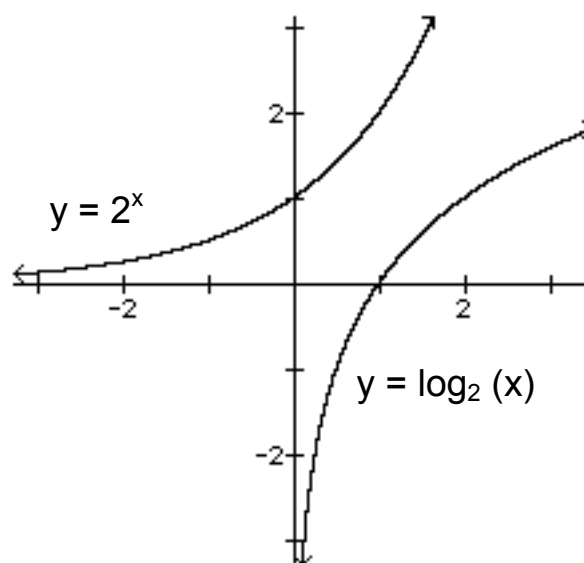
- 38) Together, a truck and a trailer cost \$25,300. If the price of the truck is \$500 less than twice the cost of the trailer, find the cost of the truck.
- 39) The second angle of a triangle is five times the first angle. If the third angle is 30° more than twice the sum of the first and second angle, find the angles.

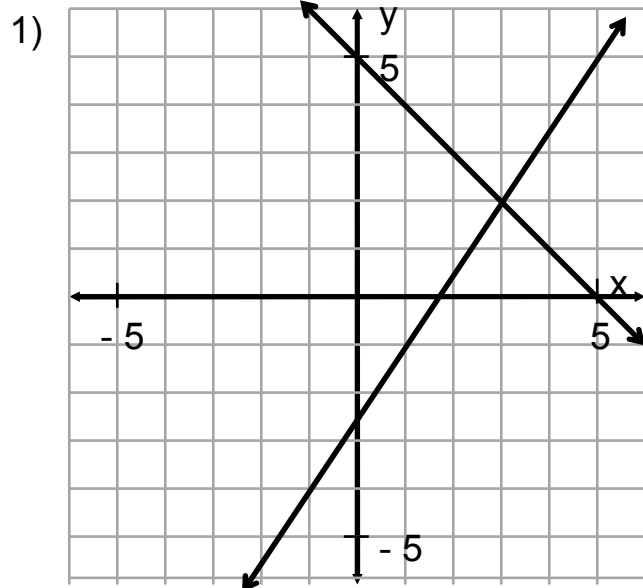
Use the graphs below to solve the given system of equations:

40) $y = -x^2 + 4$
 $y = x - 2$

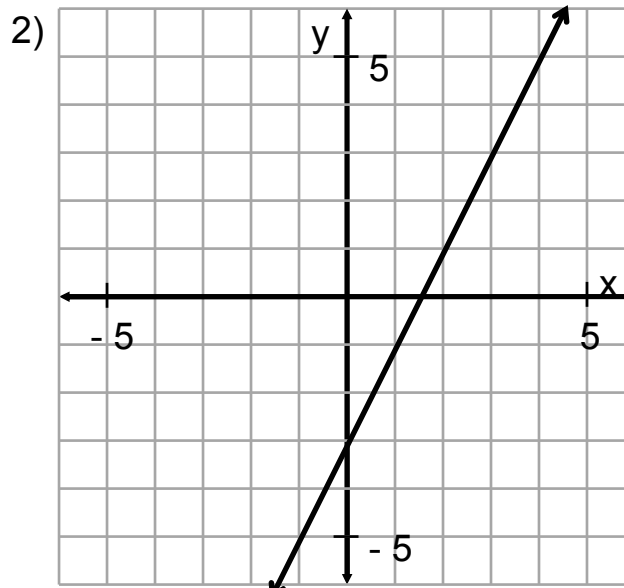


41) $y = 2^x$
 $y = \log_2(x)$

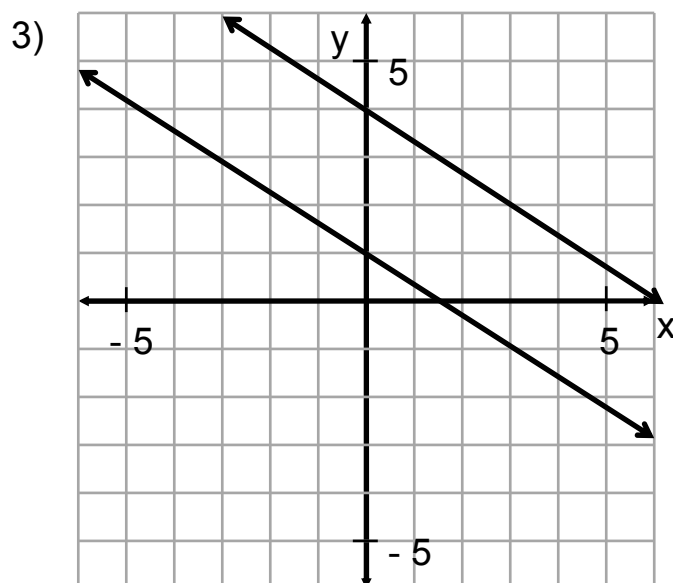


Answers:

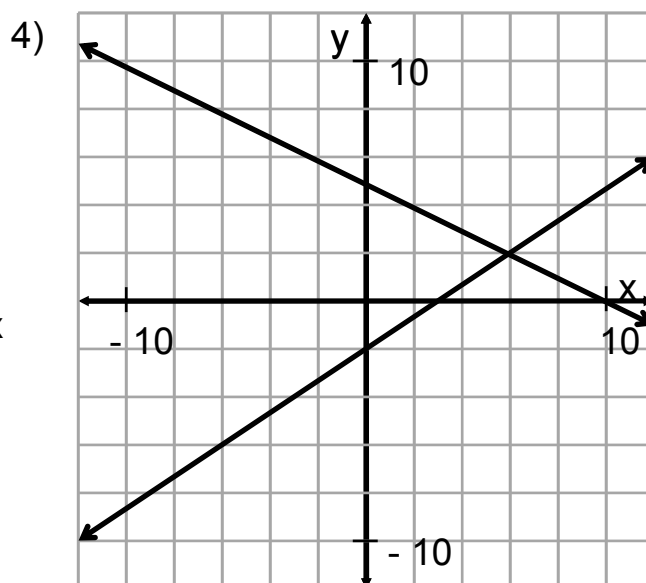
The solution is $(3, 2)$.



The solution is $\{(x, y) \mid y = 2x - 3\}$.



There is no solution.



The solution is $(6, 2)$.

- 5) The solution is $(1, -3)$. 6) The solution is $\left(\frac{179}{23}, \frac{19}{23}\right)$. 7) There is no solution.
 8) The solution is $(1, 22\frac{2}{3})$. 9) The solution is $(5, 2)$. 10) The solution is $\left(\frac{97}{9}, -\frac{34}{3}\right)$.
 11) The solution is $\{(x, y) \mid 15x - 10y = 30\}$. 12) There is no solution.
 13) There is no solution. 14) The solution is $\left(3, -\frac{11}{3}\right)$. 15) The solution is $(-3, 0)$.

- 16) $\{(x, y) \mid 10x - 6y = 4\}$. 17) The solution is $(-3, 4)$.
- 18) The solution is $(1, 2)$. 19) There is no solution. 20) The solution is $\left(\frac{10}{23}, \frac{14}{23}\right)$
- 21) The determinant is -16 . 22) The determinant is 112 .
- 23) 40 liters of the 30% solution is needed. 24) Elsa will catch Juanita at 8 pm.
- 25) The length is 10 ft and the width is 16 ft.
- 26) She bought 8 lb. of the \$2.25 candy & 6 lb. of the \$1.50 candy.
- 27) Juan is 15 years old. 28a) The speed was ≈ 22.43 m/s.
- 28b) The speed is below the normal range. 29) The angle is 40° .
- 30) 51 general interest and 23 children videos were rented.
- 31) The angles are 44° , 44° , and 92° .
- 32) \$3,500 was invested at 8%, \$5,500 was invested at -3% .
- 33) The pharmacist needs 21 cups of the 15% solution and 9 cups of the 25% solution.
- 34) The plane's speed in still air was 570 mph and the distance each way was 5400 miles.
- 35) There are forty-two quarters and thirty-three dimes.
- 36) The more expensive pair was \$23.48 and the cheaper pair was \$14.97.
- 37) 960 men and 868 women voted in the election.
- 38) The truck cost \$16,700. 39) The angles are $8\frac{1}{3}^\circ$, $41\frac{2}{3}^\circ$, & 130°
- 40) The solutions are $(-3, -5)$ and $(2, 0)$. 41) There is no solution.