Free preference reason: __graphing is preferred as the solutions can be immediate...

Answer Template

Use this template to insert your answers for the assignment. Please use one of the four methods for showing your work (EE, Math Type, ALT keys, or neatly typed). Remember that your work should be clear and legible.

1. What are the 3 methods for solving systems of equations? Which one do you prefer and why?

Answer: _Graphing, Elimination, Substitution_____

2. Describe a consistent system.

Answer: This is a system of equations that has solution

3. Describe an inconsistent system.

Answer: This is a system that has no solution or no intersecting point.

4. Describe a dependent system.

Answer: This is where the solution to the system of equations is the entire lines represented by the equations.

Go to ‘ insert’ and ‘ shapes’. Choose the circles for the points and the lines to connect the dots. Use the arrows to represent the shading.

For example:

Solve the following systems of equations using the graphing method.

What type of system is it? Name the solution if there is one.

5. x+y= 5

-x+y= 3

Calculations: This system is a consistent system

For equation [1]

x + y = 5 [1]

Using point (0, 0), we have;

0 + y = 5

y = 5 therefore one point in this line is (0, 5)

Also we have

x + 0 = 5

x = 5 therefore another point on this line is (5, 0)

For equation [2]

-x + y = 3

Using point (0, 0), we have;

0 + y = 3

y = 3 therefore one point on this line is (0, 3)

Also we have

-x + 0 = 3

x = -3 therefore another point on this line is (-3, 0)

Plotting these points give

Answer: From the graph the solution to the system of equations given is (1,

4) _____

6. 2x-2y= 8

x-y= 4

Calculations: This system is a dependent system

For equation [1]

2x - 2y = 8 [1]

Using point (0, 0), we have;

2(0) - 2y = 8

-2y = 8

y = - 4 therefore one point in this line is (0, -4)

Also we have

2x – 2(0) = 8

2x = 8

x = 4 therefore another point on this line is (4, 0)

For equation [2]

x - y = 4

Using point (0, 0), we have;

0 - y = 4

-y = 4

y = -4 therefore one point on this line is (0, -4)

Also we have

x - 0 = 4

x = 4 therefore another point on this line is (4, 0)

Plotting these points give

Answer: There are infinite numbers of solutions for these systems of

equations. _____

7. 3x-y=-2

3x-y= 4

Calculations: This system is an inconsistent system

For equation [1]

3x - y = -2 [1]

Using point (0, 0), we have;

3(0) - y = -2

-y = -2

y = 2 therefore one point in this line is (0, 2)

Also we have

3x – (0) = -2

3x = -2

x = -2/3 therefore another point on this line is (-2/3, 0)

For equation [2]

3x - y = 4

Using point (0, 0), we have;

3(0) - y = 4

-y = 4

y = -4 therefore one point on this line is (0, -4)

Also we have

3x - 0 = 4

3x = 4

x = 4/3 therefore another point on this line is (4/3, 0)

Plotting these points give

Answer: _There are no solutions to these systems of

equations_____

8. y= 6

x=-3

Calculations: This system is a consistent system

Answer: _The solution to this system of equation is (-3, 6)_____

Solve the following systems of equations using the substitution method.

What type of system is it? Name the solution if there is one.

9. x= 6y+2[1]

3x-18y= 4[2]

Calculations:

Substitute x = 6y + 2 in equation [2] we have

3(6y + 2) – 18y = 4.. [2]

18y + 6 – 18y = 4

6 = 4 (Which is not possible)

Answer: _This system is an inconsistent system, hence it has no solution_____

10. x-y= 3 [1]

x+3y= 6[2]

Calculations:

Rearranging equation [1] we have;

x = 3 + y. [3]

Substituting x = 3 + y in equation [2] we have;

3 + y + 3y = 6

3 + 4y = 6

4y = 6 – 3

4y = 3

y = ¾

Replacing this value for y in equation [3] we have;

x = 3 + ¾

x = 3¾

Answer: _The system is a consistent system and has solution (3¾, ¾)_____

11. y=-2x.. [1]

4x-3y= 12 [2]

Calculations:

Substituting y = - 2x in equation [2] we have;

4x – 3(-2x) = 12

4x + 6x = 12

10x = 12

x = 12/10 or 6/ 5

Replacing this value for x in equation [1] give;

y = -2(6/5)

y = -12/5

Answer: This system is a consistent system and has solution (6/5, -12/5)_____

12. 2x-5y= 15 [1]

x-7y= 3.. [2]

Calculations:

Rearranging equation [2] we have;

x = 3 + 7y [3]

Substituting x = 3 + 7y in equation [1] we have;

2(3 + 7y) – 5y = 15

6 + 14y – 5y = 15

6 + 9y = 15

9y = 15 – 6

9y = 9

y = 1

Replacing this value for y in equation [3] we have

x = 3 + 7(1)

x = 10

Answer: This system is a consistent system and has solution (10, 1) _____

Solve the following systems of equations using the addition (elimination)

method.

What type of system is it? Name the solution if there is one.

13. x+y= 6.. [1]

x-y= 4.. [2]

Calculations:

Adding equation [1] and equation [2] we have;

2x = 10

x = 10/2

x = 5

Substituting x = 5 in equation [1] we have;

5 + y = 6

y = 6 – 5

y = 1

Answer: This system is a consistent system and has solution (5, 1) _____

14. -2x+3y= 5 [1]

2x-y= 1.. [2]

Calculations:

Adding equation [1] and equation [2] we have;

2y = 6

y = 6/2

y = 3

Substituting y = 3 in equation [2] we have;

2x – 3 = 1

2x = 1 + 3

2x = 4

x = 4/2

x= 2

Answer: This system is a consistent system and has solution (2, 3) _____

15. 5x+y= 2.. [1]

3x+y= 1..[2]

Calculations:

Subtracting equation [2] from equation [1] we have;

2x = 1

x = ½

Substituting x = ½ in equation [1] we have;

5(1/2) + y = 2

5/2 + y = 2

y = 2 – 5/2

y = - ½

Answer: This is a consistent system and has solution (½ , - ½)_____

16. 5x= 20+y [1]

16= 3y+4x. [2]

Calculations:

Rearranging equation [1] we have;

-20 = y – 5x.. [3]

16 = 3y + 4x [2]

Multiplying equation [3] by 4 and equation [2] by 5 we have;

-60 = 4y – 20x. [4]

80 = 15y + 20x [5]

Adding equation [4] and equation [5] we have;

19y = 20

y = 20/19

Substituting this value for y in equation [1] we have;

5x = 20 + 20/19

5x = 400/19

x = 80/19

Answer: This is a consistent system and has solution (80/19 , 20/19)_____

Solve the following systems of inequalities using the graphing method.

Shade the solution set.

7. x+y> 4 [1]

y+3x <6.[2]

Calculations:

Using the equation x + y = 4

Condition 1: x = 0

0 + y = 4

y = 4

Therefore a feasible point is (0, 4)

Condition 2: y = 0

x + 0 = 4

x = 4

Therefore another feasible point is (4, 0)

Using the equation y + 3x = 6

Condition 1: x = 0

y + 3(0) = 6

y = 6

Therefore a feasible point is (0, 6)

Condition 2: y = 0

0 + 3x = 6

3x = 6

x = 6/3

x = 2

Therefore another feasible point is (2, 0)

18. x≥5

y <3

Calculations:

Answer: _Solution is x≥ 5 and y <

3_____

19. 3x-2y> 8[1]

-2y+3x <12[2]

Calculations:

Using the equation 3x - 2y = 8

Condition 1: x = 0

3(0) – 2y = 8

-2y = 8

y = 8/-2

y = - 4

Therefore a feasible point is (0, -4)

Condition 2: y = 0

3x - 2(0) = 8

3x = 8

x = 8/3 or 2 2/3

Therefore another feasible point is (2 2/3, 0)

Using the equation -2y + 3x = 12

Condition 1: x = 0

-2y + 3(0) = 12

-2y = 12

y = 12/-2

y = -6

Therefore a feasible point is (0, -6)

Condition 2: y = 0

-2(0) + 3x = 12

3x = 12

x = 12/3

x = 4

Therefore another feasible point is (4, 0)

Answer: _This system is inconsistent and hence has no solution

set_____

20. 2x+y <8.[1]

x≥4[2]

Calculations:

Using the equation 2x + y = 8

Condition 1: x = 0

2(0) + y = 8

y = 8

Therefore a feasible point is (0, 8)

Condition 2: y = 0

2x + (0) = 8

2x = 8

x = 8/2

x = 4

Therefore another feasible point is (4, 0)

Answer: _ The solution set is x≥4 and y ≥

0_____