

Solving Non-Linear Systems of Equations - Introduction

Solving Non-Linear Systems of Equations - Introduction

▶ Recall We learned to solve Systems of Linear Equations of the form:

Solving Non-Linear Systems of Equations - Introduction

▶ Recall We learned to solve Systems of Linear Equations of the form:

$$Ax + By = C$$

$$Dx + Ey = F$$

Solving Non-Linear Systems of Equations - Introduction

▶ Recall We learned to solve Systems of Linear Equations of the form:

$$Ax + By = C$$

$$Dx + Ey = F$$

Solutions to a System of Equations are pairs of numbers (x, y) that make both equations true.

Solving Non-Linear Systems of Equations - Introduction

▶ Recall We learned to solve Systems of Linear Equations of the form:

$$Ax + By = C$$

$$Dx + Ey = F$$

Solutions to a System of Equations are pairs of numbers (x, y) that make both equations true.

Since a solution makes both equations true, it's a point on both graphs.

Solving Non-Linear Systems of Equations - Introduction

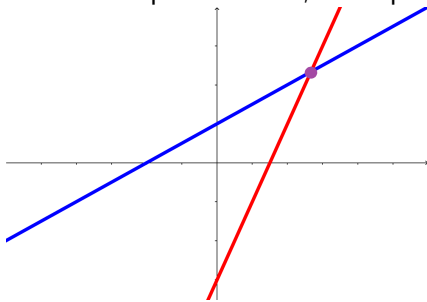
▶ Recall We learned to solve Systems of Linear Equations of the form:

$$Ax + By = C$$

$$Dx + Ey = F$$

Solutions to a System of Equations are pairs of numbers (x, y) that make both equations true.

Since a solution makes both equations true, it's a point on both graphs.



In other words, we can graphically interpret a solution to the Linear System of Equations as the **point of intersection** of the lines given by the two equations.

Solving Non-Linear Systems of Equations - Introduction

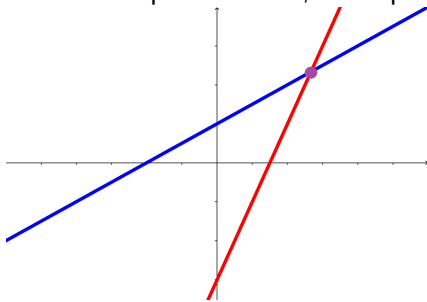
► Recall We learned to solve Systems of Linear Equations of the form:

$$Ax + By = C$$

$$Dx + Ey = F$$

Solutions to a System of Equations are pairs of numbers (x, y) that make both equations true.

Since a solution makes both equations true, it's a point on both graphs.



In other words, we can graphically interpret a solution to the Linear System of Equations as the **point of intersection** of the lines given by the two equations.

► To solve Systems of Linear Equations, we used the Substitution Method and the Elimination Method.

Solving Non-Linear Systems of Equations - Introduction

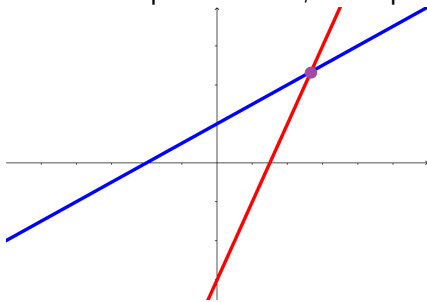
► Recall We learned to solve Systems of Linear Equations of the form:

$$Ax + By = C$$

$$Dx + Ey = F$$

Solutions to a System of Equations are pairs of numbers (x, y) that make both equations true.

Since a solution makes both equations true, it's a point on both graphs.



In other words, we can graphically interpret a solution to the Linear System of Equations as the **point of intersection** of the lines given by the two equations.

► To solve Systems of Linear Equations, we used the Substitution Method and the Elimination Method.

We will now learn how to solve Systems of Equations which are not lines

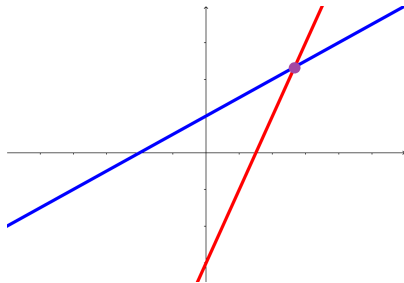
Solving Non-Linear Systems of Equations - Introduction

Solving Non-Linear Systems of Equations - Introduction

▶ We solved Systems of Linear Eqs:

$$Ax + By = C$$

$$Dx + Ey = F$$



Solving Non-Linear Systems of Equations - Introduction

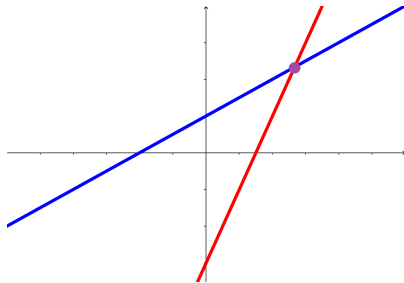
▶ We solved

Systems of Linear Eqs:

$$Ax + By = C$$

$$Dx + Ey = F$$

Solving Systems of Equations:

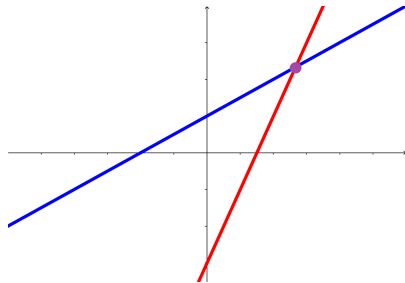


Solving Non-Linear Systems of Equations - Introduction

► We solved Systems of Linear Eqs:

$$Ax + By = C$$

$$Dx + Ey = F$$



Solving Systems of Equations:

$$y = f(x)$$

$$y = g(x)$$

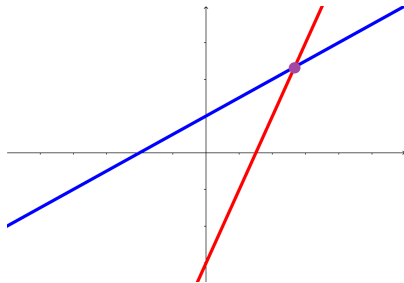
Solving Non-Linear Systems of Equations - Introduction

▶ We solved

Systems of Linear Eqs:

$$Ax + By = C$$

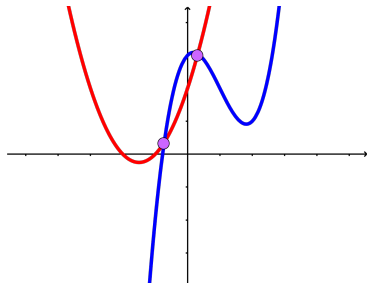
$$Dx + Ey = F$$



Solving Systems of Equations:

$$y = f(x)$$

$$y = g(x)$$

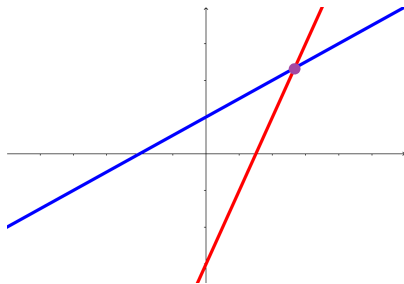


Solving Non-Linear Systems of Equations - Introduction

► We solved Systems of Linear Eqs:

$$Ax + By = C$$

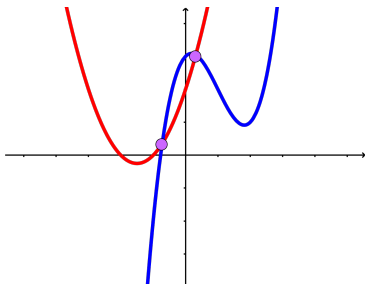
$$Dx + Ey = F$$



Solving Systems of Equations:

$$y = f(x)$$

$$y = g(x)$$



We can graphically interpret **solution(s)** to the System of Equations as the **point(s) of intersection** of the graphs.

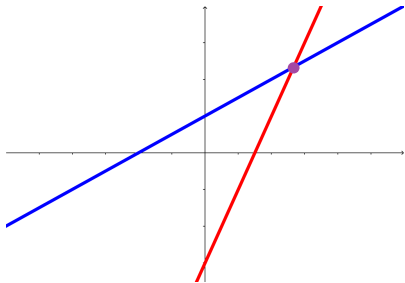
Solving Non-Linear Systems of Equations - Introduction

▶ We solved

Systems of Linear Eqs:

$$Ax + By = C$$

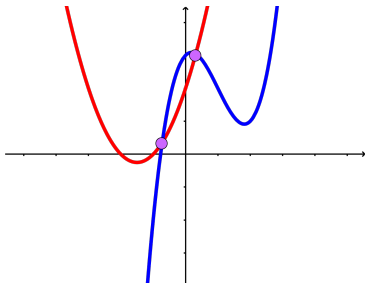
$$Dx + Ey = F$$



Solving Systems of Equations:

$$y = f(x)$$

$$y = g(x)$$



We can graphically interpret **solution(s)** to the System of Equations as the **point(s) of intersection** of the graphs.

Notice that when the graphs are not lines that we may have multiple **point(s) of intersection** and, thus, multiple **solutions** that make both equations true.

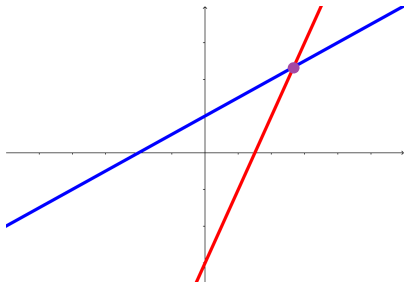
Solving Non-Linear Systems of Equations - Introduction

▶ We solved

Systems of Linear Eqs:

$$Ax + By = C$$

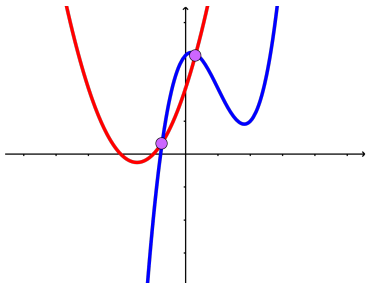
$$Dx + Ey = F$$



Solving Systems of Equations:

$$y = f(x)$$

$$y = g(x)$$



We can graphically interpret **solution(s)** to the System of Equations as the **point(s) of intersection** of the graphs.

Notice that when the graphs are not lines that we may have multiple **point(s) of intersection** and, thus, multiple **solutions** that make both equations true.

We will frequently find solutions using the Substitution Method:

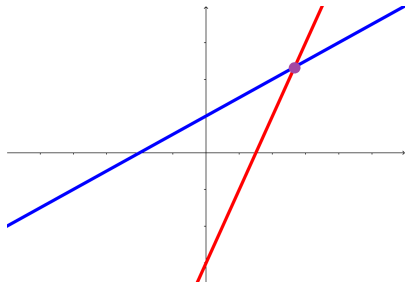
Solving Non-Linear Systems of Equations - Introduction

► We solved

Systems of Linear Eqs:

$$Ax + By = C$$

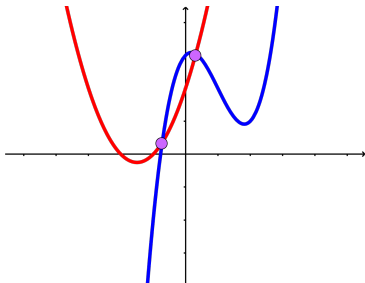
$$Dx + Ey = F$$



Solving Systems of Equations:

$$y = f(x)$$

$$y = g(x)$$



We can graphically interpret **solution(s)** to the System of Equations as the **point(s) of intersection** of the graphs.

Notice that when the graphs are not lines that we may have multiple **point(s) of intersection** and, thus, multiple **solutions** that make both equations true.

We will frequently find solutions using the Substitution Method:

$$y = y$$

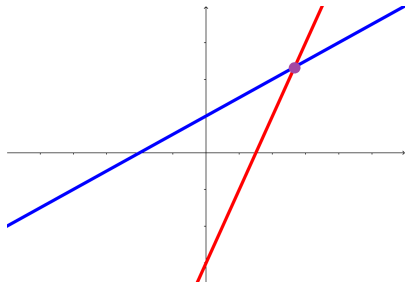
Solving Non-Linear Systems of Equations - Introduction

▶ We solved

Systems of Linear Eqs:

$$Ax + By = C$$

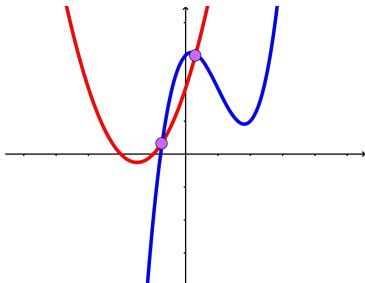
$$Dx + Ey = F$$



Solving Systems of Equations:

$$y = f(x)$$

$$y = g(x)$$



We can graphically interpret **solution(s)** to the System of Equations as the **point(s) of intersection** of the graphs.

Notice that when the graphs are not lines that we may have multiple **point(s) of intersection** and, thus, multiple **solutions** that make both equations true.

We will frequently find solutions using the Substitution Method:

$$f(x) = y = y = g(x)$$

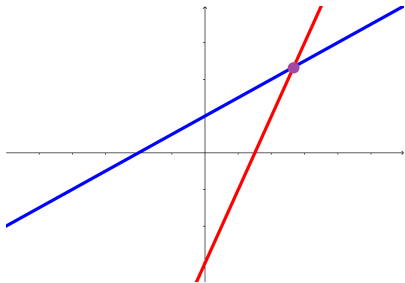
Solving Non-Linear Systems of Equations - Introduction

▶ We solved

Systems of Linear Eqs:

$$Ax + By = C$$

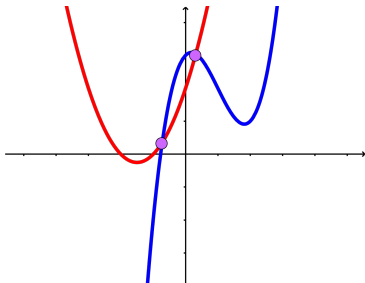
$$Dx + Ey = F$$



Solving Systems of Equations:

$$y = f(x)$$

$$y = g(x)$$



We can graphically interpret **solution(s)** to the System of Equations as the **point(s) of intersection** of the graphs.

Notice that when the graphs are not lines that we may have multiple **point(s) of intersection** and, thus, multiple **solutions** that make both equations true.

We will frequently find solutions using the Substitution Method:

$$f(x) = y = y = g(x)$$

Leaving the equation of one variable x : $f(x) = g(x)$