KOMPUTER GRAFIK

Minggu 2

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POLITEKNIK NEGERI BANDUNG

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Daftar Isi

Task 1

Primitif.gd

```
extends Node2D

# Called when the node enters the scene tree for the first time.
func _ready():
	pass # Replace with function body.

#var listWarna : PoolColorArray
var listWarna = [Color(1, 0.71, 0.76, 1),Color( 0.94, 0.97, 1, 1 ),Color( 1, 0.98, 0.8, 1 )]

func put_pixel(x,y,color):

	draw_primitive(
		PoolVector2Array([Vector2(x,y)]),
		PoolColorArray([color]),
		PoolVector2Array()
	)

func line_dda(xa: float, ya: float, xb: float, yb: float, color):
	var x = xa
	var y = ya
	var dx = xb-xa
	var dy = yb-ya
	var steps
	var xIncrement
	var yIncrement

	if(abs(dx) > abs(dy)):
		steps = abs(dx)
	else:
		steps = abs(dy)

	xIncrement = dx/steps
	yIncrement = dy/steps

	put_pixel(round(x), round(y), color)

	for k in range(steps):
		x += xIncrement
		y += yIncrement
		put_pixel(x, y, color)

func line_bresenham(xa: float, ya: float, xb: float, yb: float, color):
	var dx: int = abs(xa - xb)
	var dy: int = abs(ya - yb)

	var p;
```

```
	var duady;
	var duadydx;

	p = 2 * dy - dx;
	duady = 2 * dy;
	duadydx =  2 * (dy - dx);

	var x: int
	var y: int
	var xEnd: int

	if xa > xb:
		x = xb
		y = yb
		xEnd = xa
	else:
		x = xa
		y = ya
		xEnd = xb
	put_pixel(x, y, color)

	while x < xEnd:
		x += 1

		if p < 0:
			p += duady
		else:
			y += 1
			p += duadydx

		put_pixel(x, y, color)
```

Line.gd

```
extends "res://Script/primitif.gd"

# Called when the node enters the scene tree for the first time.
func _ready():
	pass # Replace with function body.

func frame(margin):
	var size_x = get_viewport().size.x
	var size_y= get_viewport().size.y

	line_bresenham(margin, margin, size_x - margin, margin, listWarna[0])
	line_dda(size_x - margin, margin, size_x - margin, size_y - margin,
listWarna[0])
	line_bresenham(size_x - margin, size_y - margin, margin, size_y -
margin, listWarna[0])
	line_dda(margin, size_y - margin, margin, margin, listWarna[0])
```

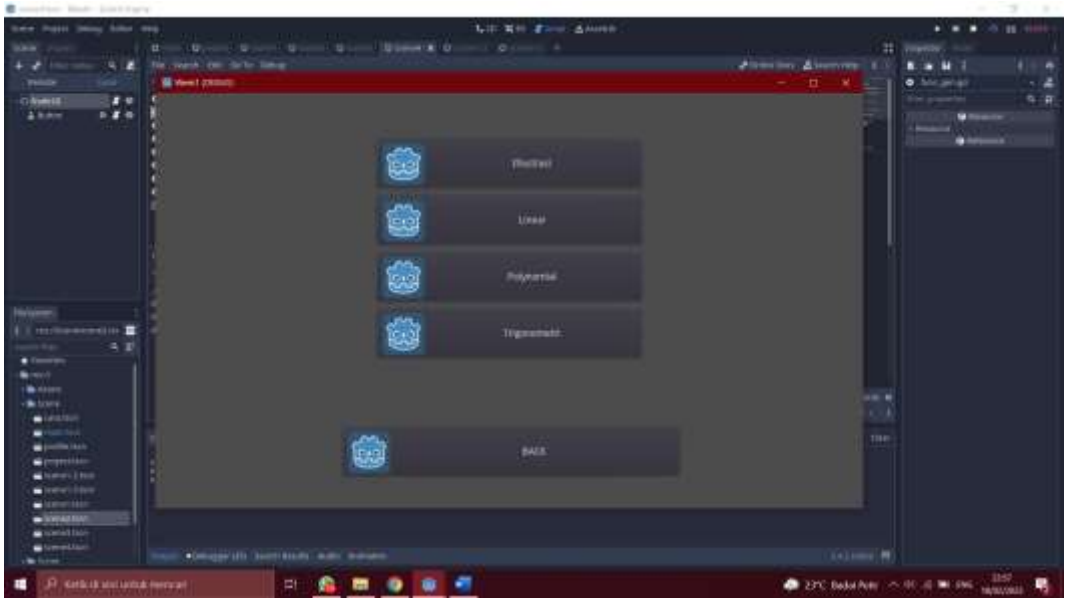
```
func kartesian(margin):
	var max_x = get_viewport().size.x
	var max_y= get_viewport().size.y
	var mid_x = max_x/2
	var mid_y = max_y/2

	line_dda(mid_x, margin, mid_x, max_y - margin, listWarna[1])
	line_bresenham(margin, mid_y, max_x - margin, mid_y, listWarna[1])

func _draw():
	frame(50)
	kartesian(50)
```

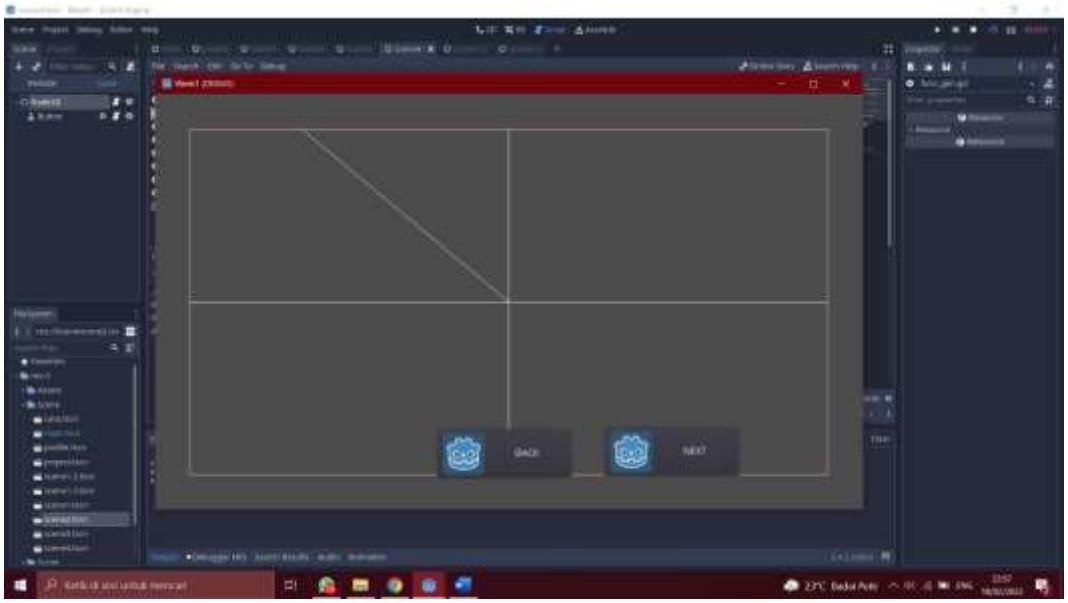
Func_gen.gd

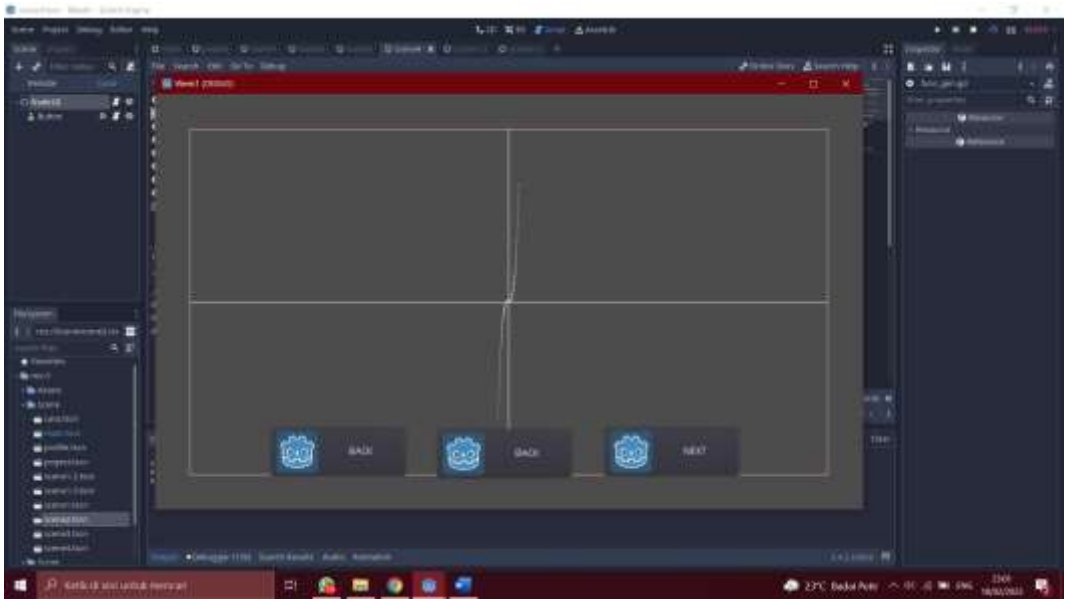
```
extends "res://Script/line.gd"

# Called when the node enters the scene tree for the first time.
func _ready():
	pass # Replace with function body.

func draw_linear_func(mid_x,mid_y,color):
	#fungsi y = x
	line_bresenham(mid_x, mid_y, mid_x-mid_y, 50, color)

#func draw_trigonometry_func():
func draw_polynomial_func(a, b, c, d, xo, yo,heigt, color):
	var x; var xa; var xb
	var y; var ya; var yb

	x = -heigt
	y = (a * x * x * x) + (b * x * x) + (c * x) + d
	xa = xo + x
	ya = yo - y
	while(x < heigt):
		x = x + 0.1
		y = (a * x * x * x) + (b * x * x) + (c * x) + d
		xb = xo + x
		yb = yo - y
		line_bresenham(xa, ya, xb, yb, color)
		xa = xb
		ya = yb

func draw_trigonometry_func(a, xo, yo, color):
	var max_x = get_viewport().size.x
	var max_y = get_viewport().size.y
	var x; var xa; var xb
	var y; var ya; var yb

	x = deg2rad(a)
	y = sin(x) * 50
```

```
        xa = xo + (x * 50)
        ya = yo - y
        while(a < 500):
                a = a + 1
                x = deg2rad(a)
                y = sin(x) * 50
                xb = xo + (x * 50)
                yb = yo - y
                line_bresenham(xa, ya, xb, yb, color)
                xa = xb
                ya = yb
```

Task 2


Quadratic
Linear
Polynomial
Trigonometric
BACK


BACK
NEXT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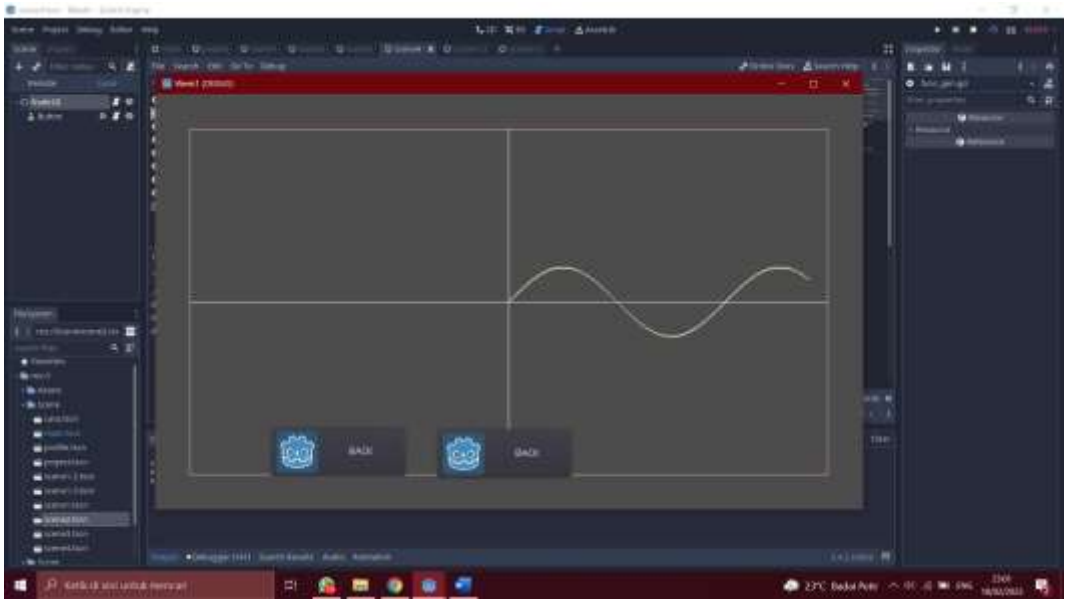
NEXT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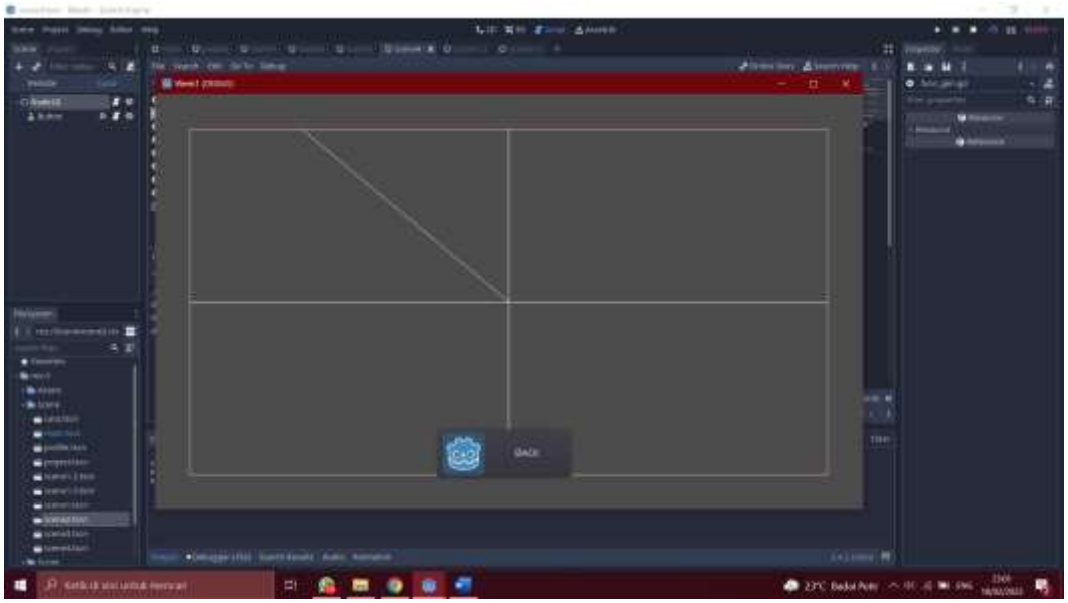
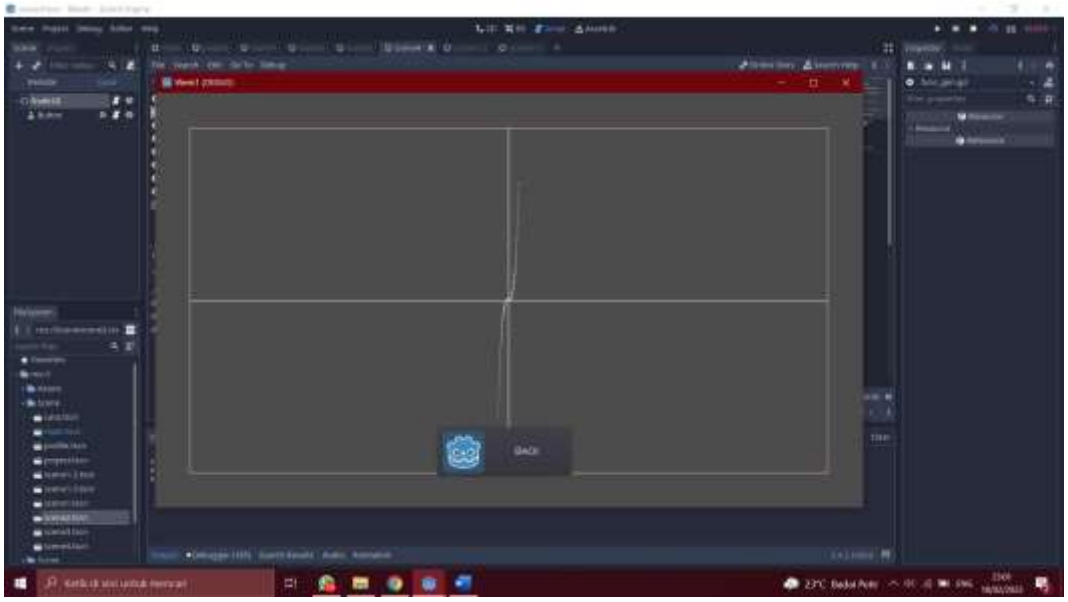
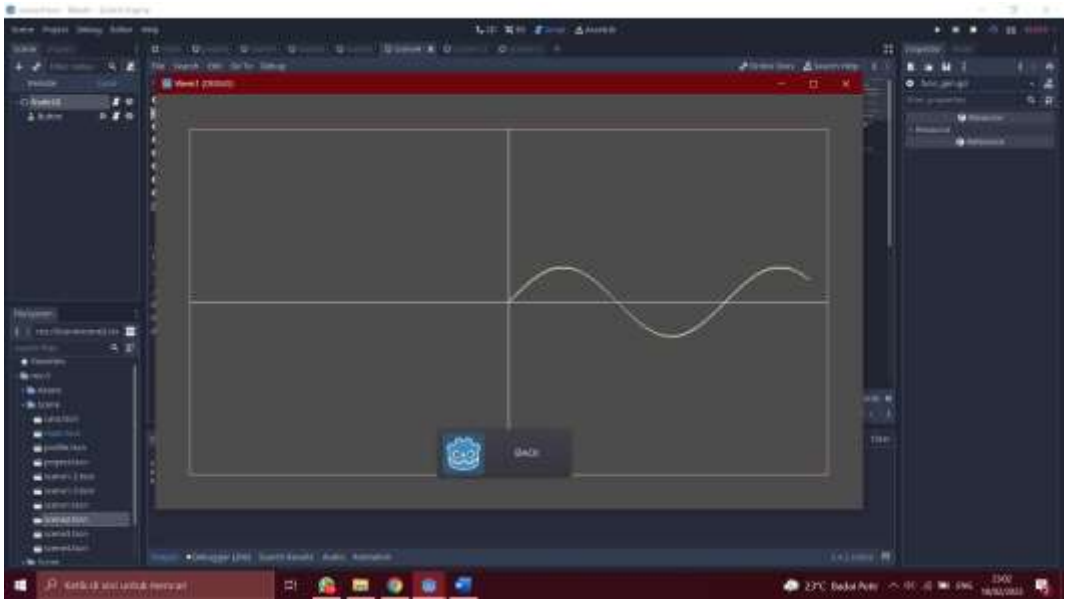


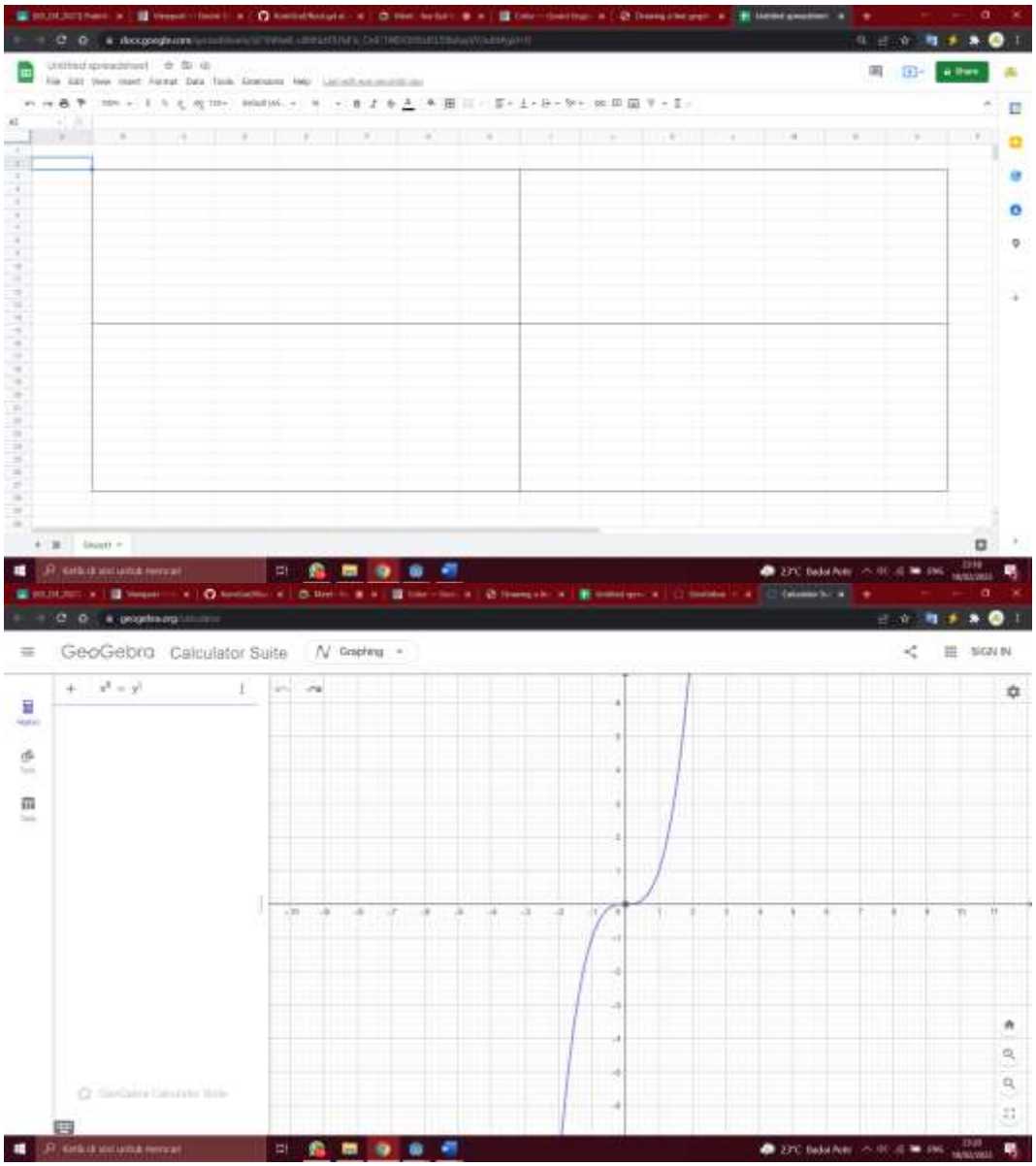


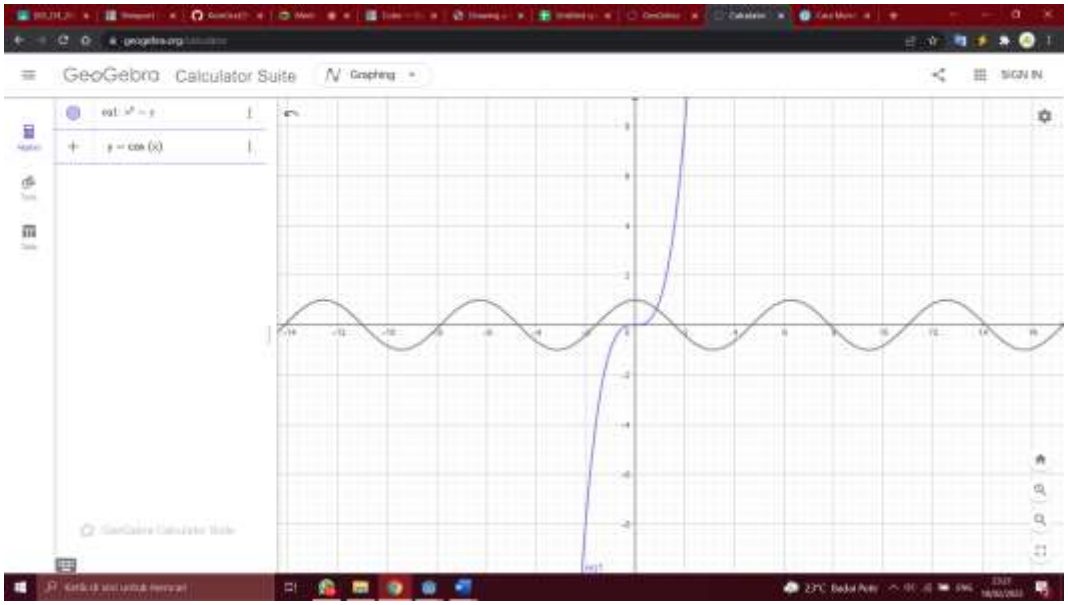

BACK

Leason Learn

Setelah melakukan tugas yang telah diberikan banyak hal yang bisa diambil, saya menjadi lebih mengenal tentang aplikasi godot yang awalnya hanya mengira bahwa godot hanya digunakan untuk pembuatan game setelah mempelajari tentang garis-garis yang ada di mata kuliah computer grafik ini saya menjadi mengetahui bahwa godot bisa dijadikan alat untuk membuat grafik secara manual, yang dimaksudkan kepada kita sebagai mahasiswa agar mengerti bagaimana sebuah tools/alat bekerja. Saya juga merasakan bagaimana pentingnya matematika dalam ilmu informatika ini setelah melakukan tugas garis ini. Mengetahui cara membuat garis ada 2 cara besar yaitu dengan dda atau dengan bresenham, juga menerapkannya kedalam beberapa bentuk garis seperti linear, polynomial dan juga trigonometri.

Lampiran




GeoGebra Calculator Suite
Graphing
SIGN IN
y = cos (x)

Referensi

Admin. (2021) Godot Docs: https://docs.godotengine.org/en/stable

Admin. (2021) Godot Docs: https://docs.godotengine.org/en/stable/classes/class_color.html

Admin. (2021) Godot Docs: https://docs.godotengine.org/en/stable/classes/class_color.html