

# SAT Desmos Command Sheet

Practice in the applicable College Board testing calculator. Numerical graph results do not establish symbolic identities or remove domain restrictions.

## Linear system

$$\begin{aligned}2x+y&=11 \\ x-y&=1\end{aligned}$$

**Checked result:** Intersection (4,3). The original equations give 11 and 1.

**Watch for:** Read the requested coordinate or combination; an intersection is a pair, not automatically the final answer.

## Quadratic zeros

$$y=x^2-6x+5$$

**Checked result:** Zeros at  $x=1$  and  $x=5$ ; vertex (3,-4).

**Watch for:** Zeros are  $x$ -values at  $y=0$ . The vertex is a different quantity.

## Function evaluation

$$\begin{aligned}f(x)&=2x^2-3x+1 \\ f(4)\end{aligned}$$

**Checked result:**  $f(4)=21$ .

**Watch for:** Use parentheses for a negative input, and respect any problem domain.

## Numerical equality

$$\begin{aligned}y&=x^2 \\ y&=2x+8\end{aligned}$$

**Checked result:** Intersections (-2,4) and (4,16).

**Watch for:** Zoom out to find both intersections. Check both original equations.

## Table regression

$$\begin{aligned}\text{Table } x\_1: & 1,2,3,4 \\ \text{Table } y\_1: & 9,13,17,21 \\ y\_1 \sim & m x\_1 + b\end{aligned}$$

**Checked result:** For this exact table  $m=4$  and  $b=5$ . A prediction at  $x=6$  is 29.

**Watch for:** Use  $\sim$  for fitting a model and  $=$  for defining it. A fitted prediction is not a newly observed data point.

## Compare a vertex with endpoints

```
f(x)=-2(x-4)^2+30  
f(0)  
f(2)
```

**Checked result:** On  $0 \leq x \leq 2$ , the maximum is 22 at  $x=2$ , not the unrestricted vertex value 30.

**Watch for:** A graph alone does not remove restrictions. Check endpoints and whether the vertex lies in the allowed interval.

## Radians or degrees

```
sin(30) in degree mode
```

**Checked result:** 1/2 in degree mode.

**Watch for:** Use the mode appropriate to the stated angle units. The same numeric input in radians has a different meaning.

## Off-screen values

```
y=x+100  
y=2x
```

**Checked result:** Intersection (100,200).

**Watch for:** Change the graph window when the needed values are outside it. A missing visible intersection is not proof of no solution.

## Official calculator configuration

<https://www.desmos.com/testing>

<https://help.desmos.com/hc/en-us/articles/18228147914381-Practice-With-Testing-Calculators>

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