

1.3 Introduction to Functions

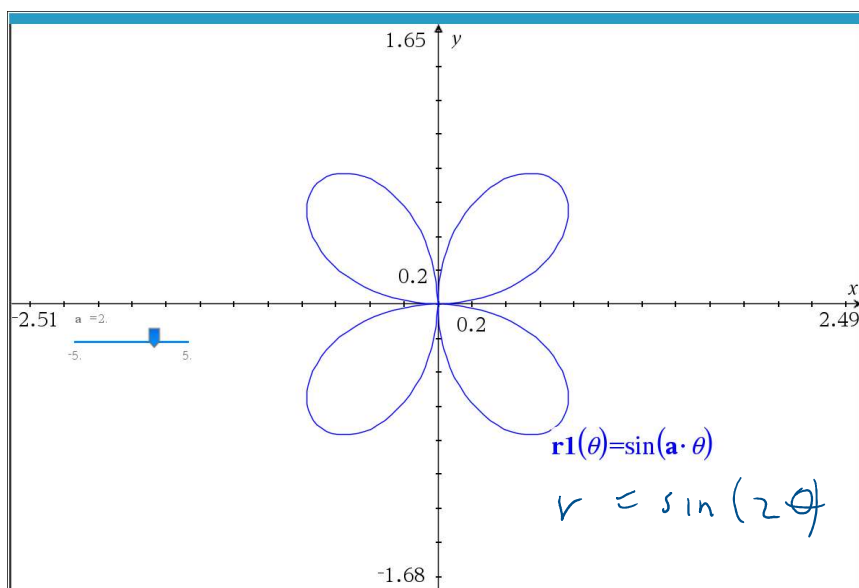
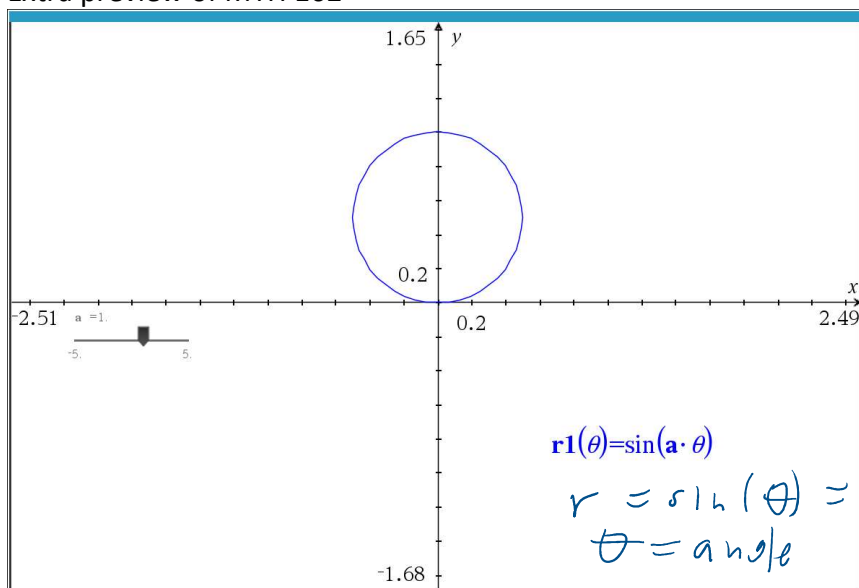
1.3.1 Exercises

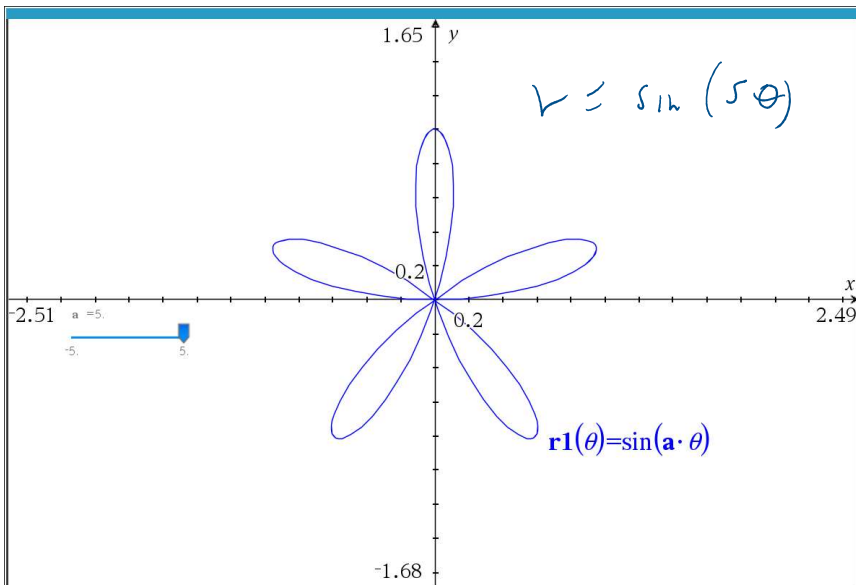
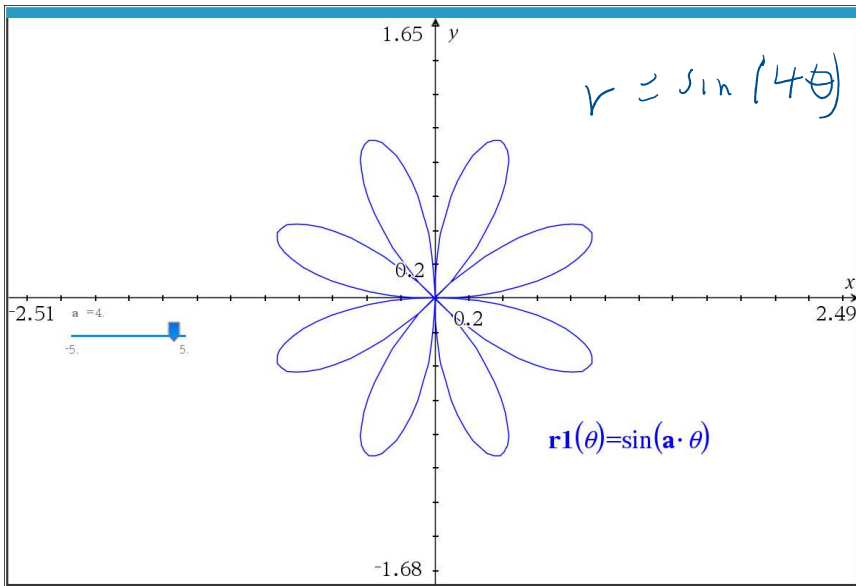
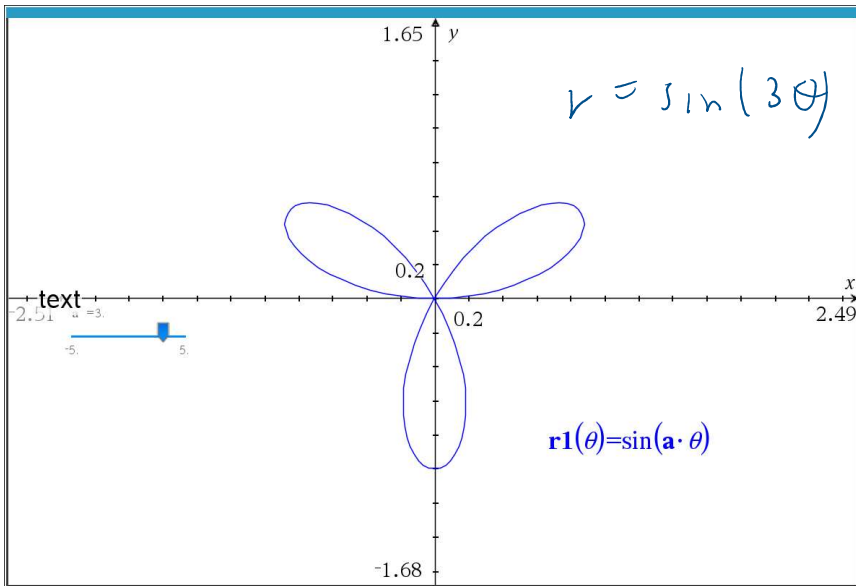
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[ClassPad Workspace](#)

Free calculator emulator website.

Extra preview of MTH 162





In Exercises 33 - 47, determine whether or not the equation represents y as a function of x .

35. $x^3y = -4$

Is the point $(-1, 4)$ on the graph?

$$(-1)^3(4) \stackrel{?}{=} -4$$

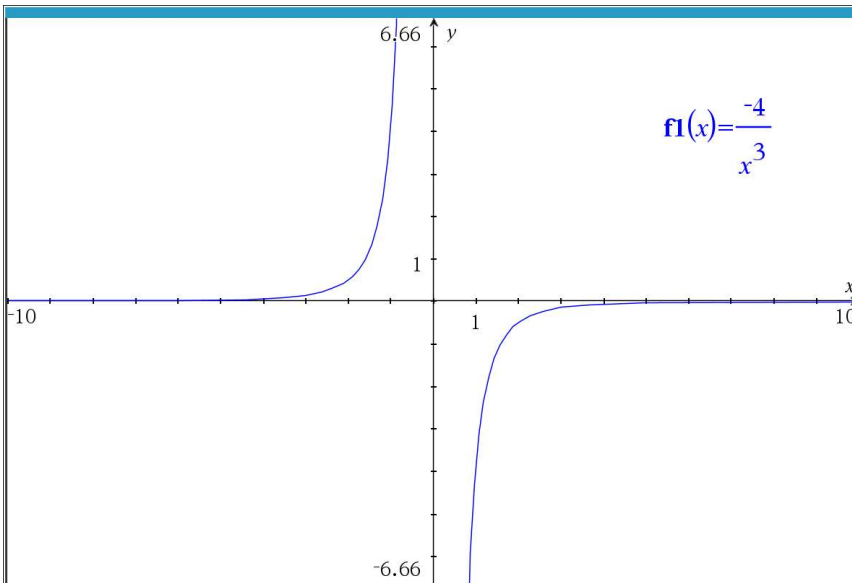
$$(-1)(4) \stackrel{?}{=} -4$$

$$-4 = -4 \quad \checkmark$$

Yes

solve for y

$$y = -\frac{4}{x^3}$$



What is the domain of this function?

$$\frac{-4}{(-1)^3}$$

$-1 \in \text{domain}$

4

$$\frac{-4}{0^3}$$

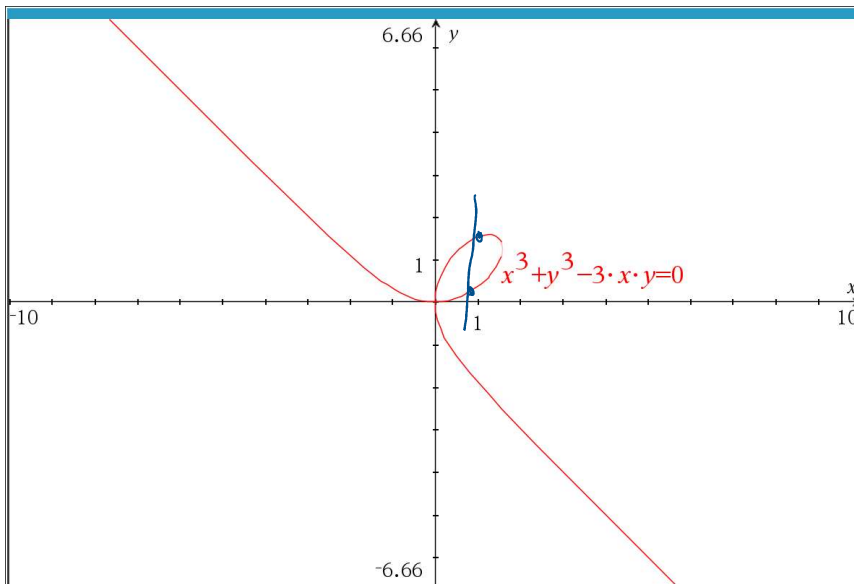
$0 \notin \text{domain}$

undef

$$\begin{aligned} \text{domain} &= \{x \mid x \neq 0\} \\ &= (-\infty, 0) \cup (0, \infty) \end{aligned}$$

50. $x^3 + y^3 - 3xy = 0$

graph fails the vertical line test
 y is not a
function of x



Scientific Notebook

$$x^3 + y^3 - 3xy = 0, \text{ Solution is: } \sqrt[3]{\sqrt{\frac{1}{4}x^6 - x^3} - \frac{1}{2}x^3} + \frac{x}{\sqrt[3]{\sqrt{\frac{1}{4}x^6 - x^3} - \frac{1}{2}x^3}},$$

$$\frac{1}{2}i\sqrt{3} \left(\sqrt[3]{\sqrt{\frac{1}{4}x^6 - x^3} - \frac{1}{2}x^3} - \frac{x}{\sqrt[3]{\sqrt{\frac{1}{4}x^6 - x^3} - \frac{1}{2}x^3}} \right) -$$

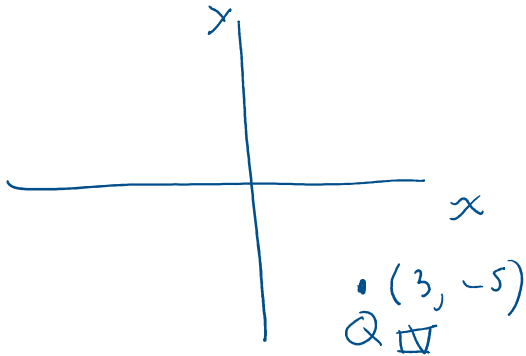
$$\frac{1}{2} \sqrt[3]{\sqrt{\frac{1}{4}x^6 - x^3} - \frac{1}{2}x^3} - \frac{1}{2} \frac{x}{\sqrt[3]{\sqrt{\frac{1}{4}x^6 - x^3} - \frac{1}{2}x^3}}, -$$

$$\frac{1}{2} \sqrt[3]{\sqrt{\frac{1}{4}x^6 - x^3} - \frac{1}{2}x^3} - \frac{1}{2}i\sqrt{3} \left(\sqrt[3]{\sqrt{\frac{1}{4}x^6 - x^3} - \frac{1}{2}x^3} - \frac{x}{\sqrt[3]{\sqrt{\frac{1}{4}x^6 - x^3} - \frac{1}{2}x^3}} \right) -$$

$$\frac{1}{2} \frac{x}{\sqrt[3]{\sqrt{\frac{1}{4}x^6 - x^3} - \frac{1}{2}x^3}}$$

Your Name MDE 61 quiz 1 Write each problem. Show calculations. No calculator.

1. Plot the point $(3, -5)$ in the Cartesian coordinate plane, and identify the quadrant.



2. What is the domain of the relation $R = \{(0,5), (-3,5), (4,5)\}$?

$$\text{domain} = \{0, -3, 4\}$$

3. What is the range of R from #2?

$$\text{range} = \{5\}$$

4. Does R represent y as a function of x? Why or why not?

Yes, no x-value is repeated.

5. What is the domain of the function $f(x) = \frac{\sqrt{2x-1}}{x+1}$?

$$x = -1 \notin \text{domain}$$

to avoid division by zero

$$2x - 1 \geq 0$$

$$2x \geq 1$$
$$\boxed{x \geq \frac{1}{2}}$$

$$\text{domain} = \left\{ x \mid x = -1 \text{ and } x \geq \frac{1}{2} \right\}$$
$$= \boxed{\left\{ x \mid x \geq \frac{1}{2} \right\}}$$

The graph supports our conclusion.

