

Unit 2: Rational Expressions & Exponents

Lesson 1: Exploring Graphs

For each function provided:

- Complete the table of values
- Plot the points and graph the function
- State the **domain** and **range** and the **equation(s) of the asymptote(s)**
- Verify your graphs using graphing technology

$$f(x) = 2^x$$

$$g(x) = 3^x$$

$$h(x) = \left(\frac{1}{4}\right)^x$$

$$k(x) = \frac{1}{x}$$

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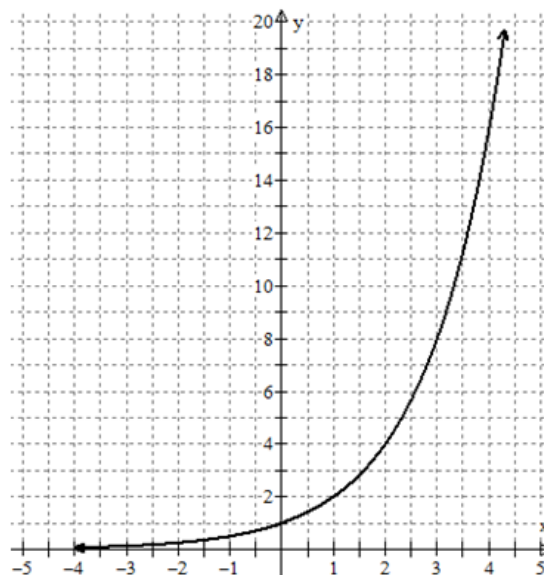
1. $f(x) = 2^x$

x	$f(x)$
-4	0.0625
-3	0.125
-2	0.25
-1	0.5
0	1
1	2
2	4
3	8
4	16

Domain: $\{x \mid x \in \mathbb{R}\}$

Range: $\{y \mid y \in \mathbb{R}, y > 0\}$

Asymptotes: $y = 0$



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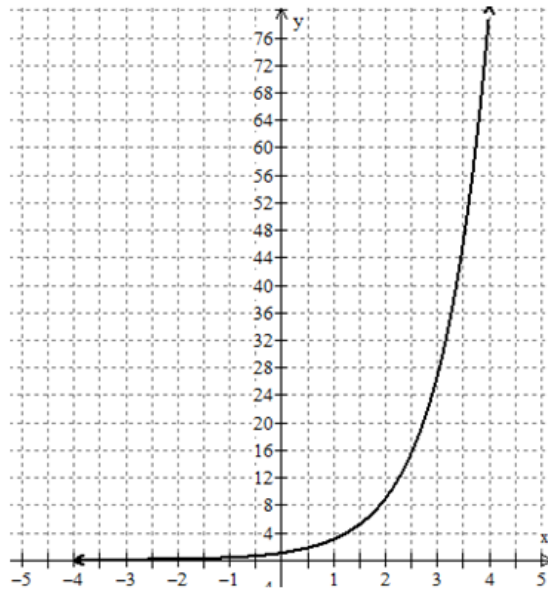
2. $g(x) = 3^x$

x	$g(x)$
-4	0.012345679
-3	0.037
-2	0.1
-1	0.3
0	1
1	3
2	9
3	27
4	81

Domain: $\{x \mid x \in \mathbb{R}\}$

Range: $\{y \mid y \in \mathbb{R}, y > 0\}$

Asymptotes: $y = 0$



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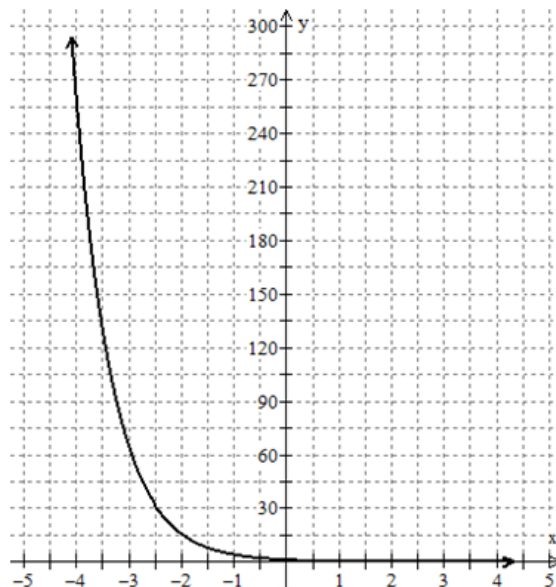
3. $h(x) = \left(\frac{1}{4}\right)^x$

x	$h(x)$
-4	256
-3	64
-2	16
-1	4
0	1
1	0.25
2	0.0625
3	0.015625
4	0.00390625

Domain: $\{x \mid x \in \mathbb{R}\}$

Range: $\{y \mid y \in \mathbb{R}, y > 0\}$

Asymptotes: $y = 0$



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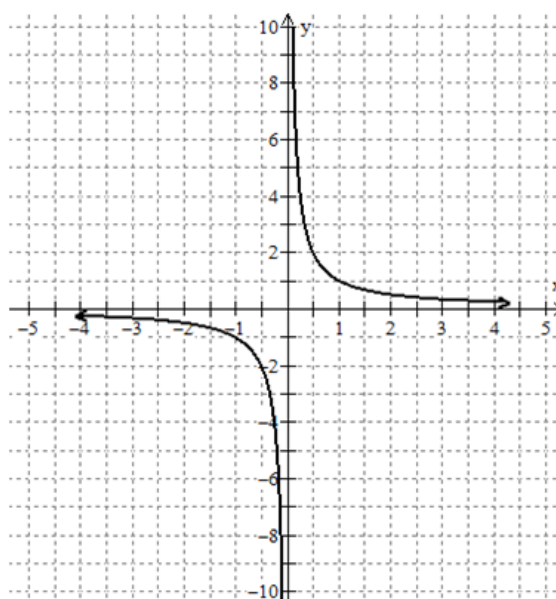
4. $k(x) = \frac{1}{x}$

x	$k(x)$
-4	-0.25
-3	-0.3
-2	-0.5
-1	-1
-0.5	-2
-0.25	-4
-0.125	-8
0	undefined
0.125	8
0.25	4
0.5	2
1	1
2	0.5
3	0.3
4	0.25

Domain: $\{x \mid x \in \mathbb{R}, x \neq 0\}$

Range: $\{y \mid y \in \mathbb{R}, y \neq 0\}$

Asymptotes: $y = 0, x = 0$



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