

### Answer on Question #57015 – Math – Algebra

1. Describe the domain and range and sketch the graph.

5

$f(x) = \sqrt{x-4} + 2$  The five is in between the area above it rests.

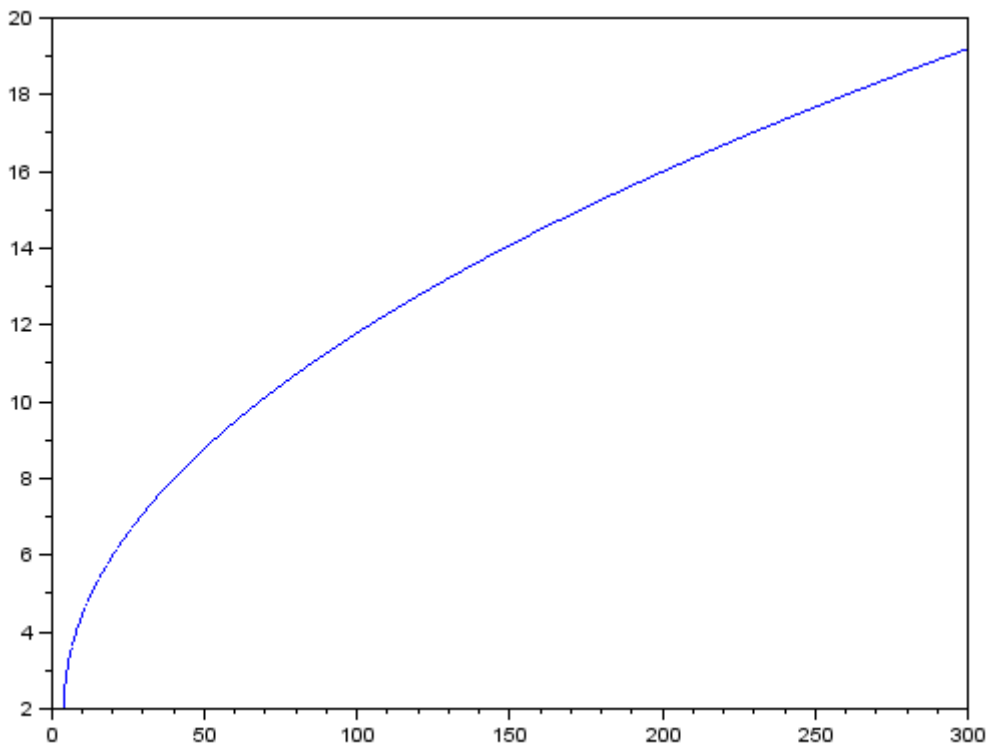
#### Solution

Domain of  $f(x) = \sqrt{x-4} + 2$ :  $x - 4 \geq 0, x \geq 4$

$\{x \in R: x \geq 4\}$

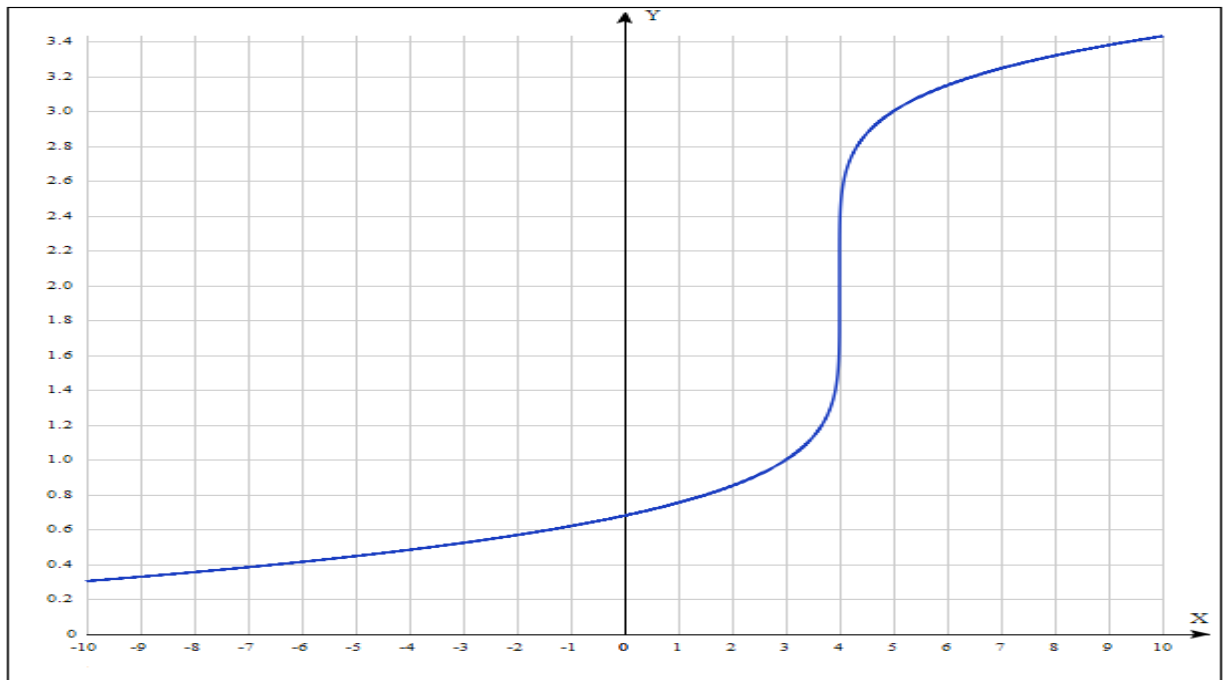
Range of  $f(x) = \sqrt{x-4} + 2$ :

$\{f \in R: f \geq 2\}$



Domain of  $f(x) = \sqrt{x-4} + 2$  is  $R$  (all real numbers).

Range of  $f(x) = \sqrt{x-4} + 2$  is  $R$  (all real numbers).

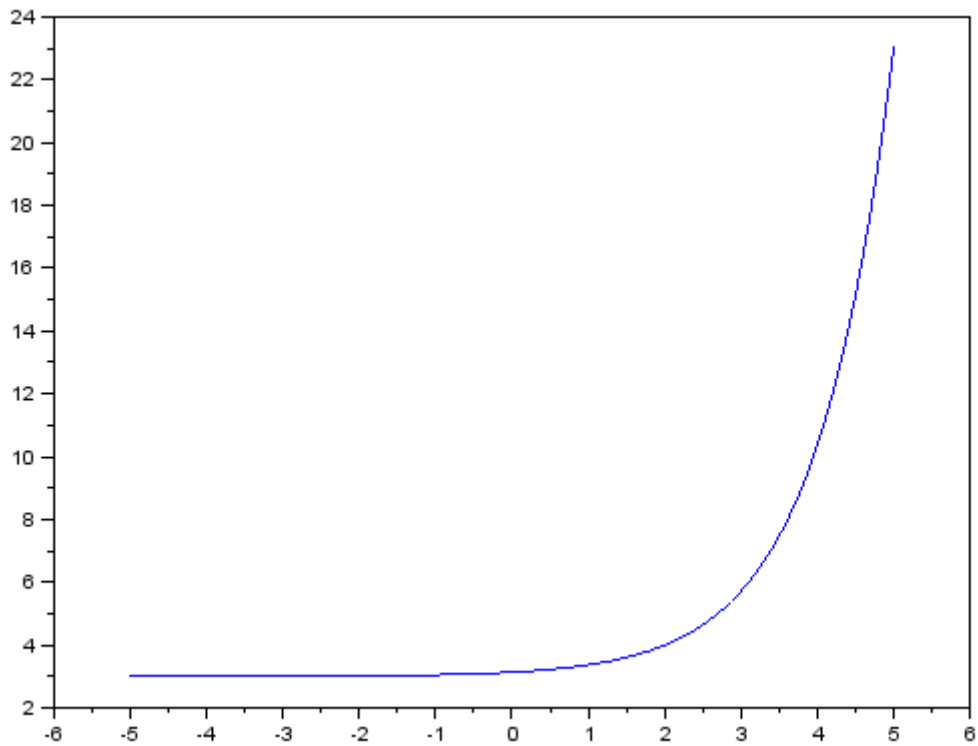


2. Describe the domain and range and sketch the graph.  $f(x) = e^{(x-2)} + 3$

**Solution**

Domain:  $R$  (all real numbers)

Range:  $\{f \in R: f > 3\}$

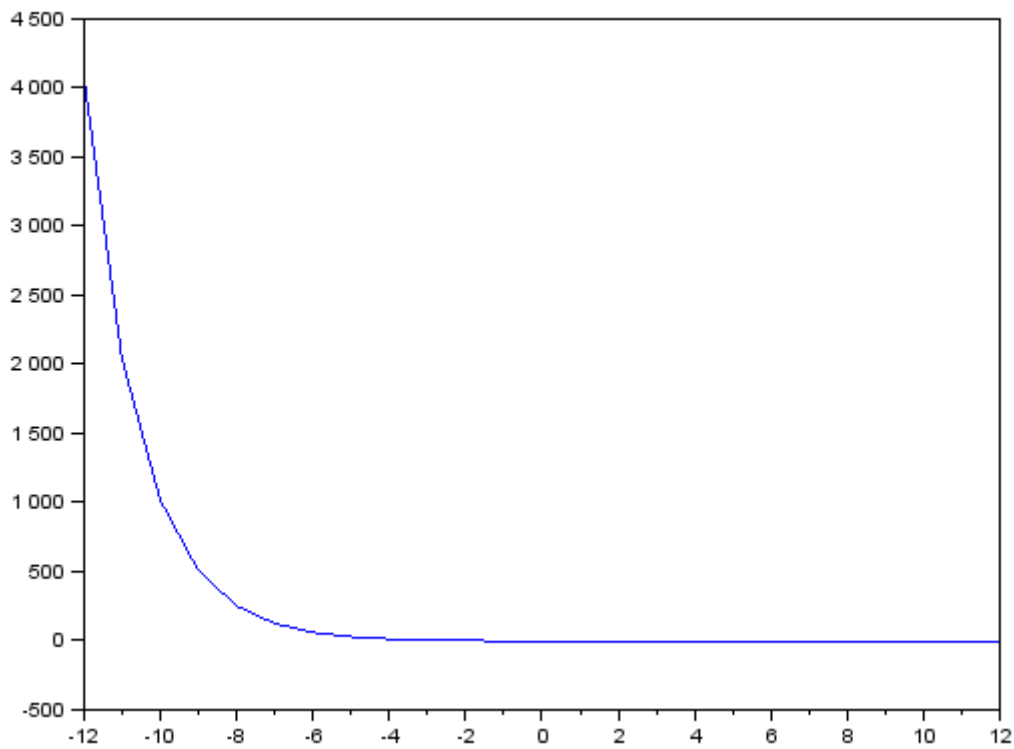


3. Describe the domain and range and sketch the graph.  $f(x) = \left(\frac{1}{2}\right)^x - 3$

**Solution**

Domain:  $R$  (all real numbers)

Range:  $\{f \in R: f > -3\}$

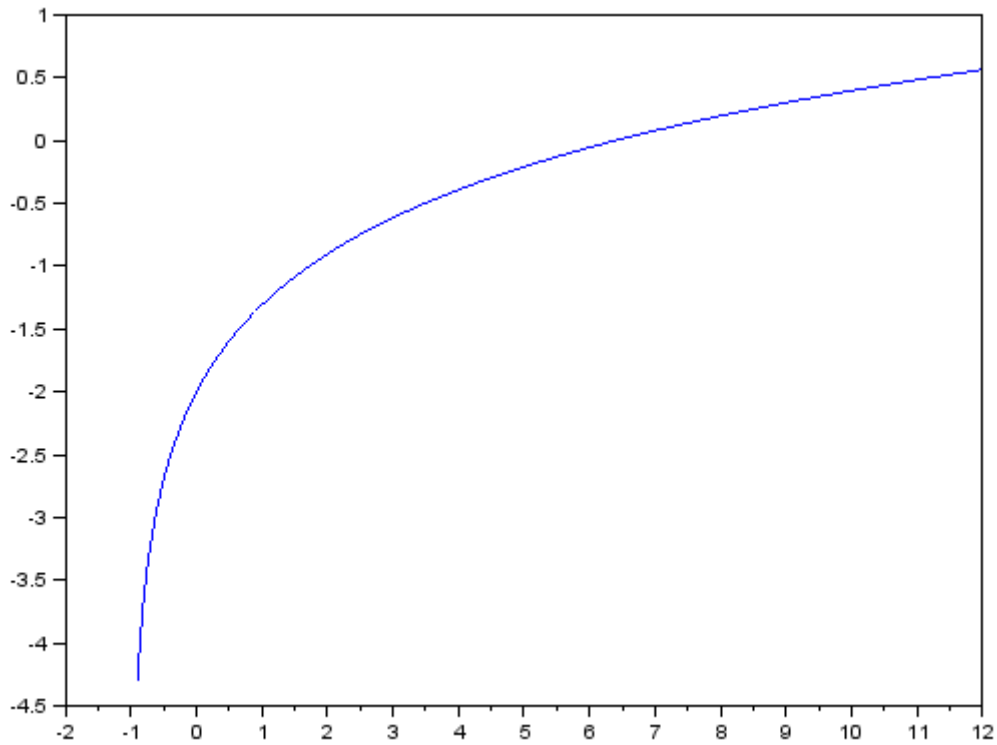


4. Describe the domain and range and sketch the graph.  $f(x) = \ln(x + 1) - 2$

**Solution**

Domain:  $\{x \in R: x > -1\}$

Range:  $R$  (all real numbers)



5. Solve each equation for x. Show work  $5 = \log_3(x^2 + 18)$

**Solution**

$$\log_a b = x \leftrightarrow a^x = b$$

$$5 = \log_3(x^2 + 18) \leftrightarrow 3^5 = x^2 + 18$$

$$x^2 = 243 - 18$$

$$x^2 = 225$$

$$x = 15 \text{ or } x = -15$$

**Answer:**  $x = 15$ ,  $x = -15$ .

6. Solve each equation for x. Show work  $-2 = \ln(3x + 5)$

**Solution**

$$\log_a b = x \leftrightarrow a^x = b$$

$$-2 = \ln(3x + 5) \leftrightarrow e^{-2} = 3x + 5$$

$$3x = \frac{1}{e^2} - 5$$

$$x = \frac{1}{3} \left( \frac{1}{e^2} - 5 \right)$$

**Answer:**  $x = \frac{1}{3} \left( \frac{1}{e^2} - 5 \right)$

7. Solve each equation for x. Show work  $e^x e^{x+1} = 1$

**Solution**

$$e^x e^{x+1} = 1$$

$$e^{2x+1} = 1$$

$$e^{2x+1} = e^0$$

$$2x + 1 = 0$$

$$2x = -1$$

$$x = -\frac{1}{2}$$

**Answer:**  $x = -\frac{1}{2}$ .