

Standard 3 Practice Quiz E

MA 109

Print Your Name: Solutions ID: _____

Be sure that the ID number above is your correct 8-digit student ID number (without the leading 9). If this number is incorrect or not legible, it will take longer to process your score on this quiz.

This is practice for an in-class assessments on Standard 3. The only technology allowed during this quiz is a 4-function calculator. No notes or books may be used. This is an individual quiz, so any work done here must be entirely your own work.

Show all of your work. Your work will be graded on both accuracy and completeness, and partial credit is possible. You have 20 minutes to take this quiz.

Be sure to complete both the questions on this page and those on the back of this page.

1. Find the domain of each function below. Write your answer **using interval notation** in the answer box.

a. $f(x) = \frac{2x-7}{\sqrt{5x+2}}$ ← square root in denominator

$$\begin{aligned} 5x+2 &> 0 \\ -2 & \quad -2 \\ 5x &> -2 \\ \frac{5x}{5} & \quad \frac{-2}{5} \\ x &> -2/5 \end{aligned}$$

A horizontal number line is drawn. A vertical tick mark is labeled $-2/5$ below the line. A green circle is drawn at this tick mark. A green horizontal line starts from the circle and extends to the right, representing the inequality $x > -2/5$.

Answer:

$$(-2/5, \infty)$$

b. $h(x) = 2\sqrt{7x-1} + 4$
↳ square root

$$\begin{aligned} 7x-1 &\geq 0 \\ +1 & \quad +1 \\ 7x &\geq 1 \\ \frac{7x}{7} & \quad \frac{1}{7} \\ x &\geq 1/7 \end{aligned}$$

A horizontal number line is drawn. A vertical tick mark is labeled $1/7$ below the line. A green circle is drawn at this tick mark. A green horizontal line starts from the circle and extends to the right, representing the inequality $x \geq 1/7$.

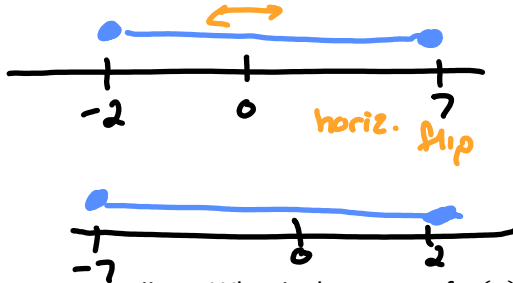
Answer:

$$[1/7, \infty)$$

2. Suppose $f(x)$ has domain $[-2, 7]$ and range $(1, 3]$. Determine the domain and range of each function given below.

a. $g(x) = \frac{1}{2}f(-x)$.
vertical compression
horizontal flip

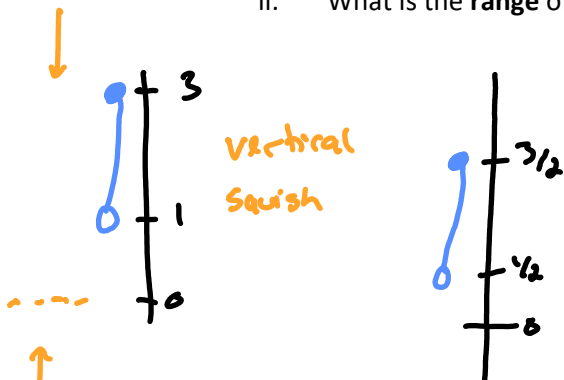
- i. What is the domain of $g(x)$? Write your answer using interval notation.



Answer:

$$[-7, 2]$$

- ii. What is the range of $g(x)$? Write your answer using interval notation.



Answer:

$$[\frac{1}{2}, \frac{3}{2}]$$

b. $h(x) = f(x - 2) + 5$.
shift → right
shift up

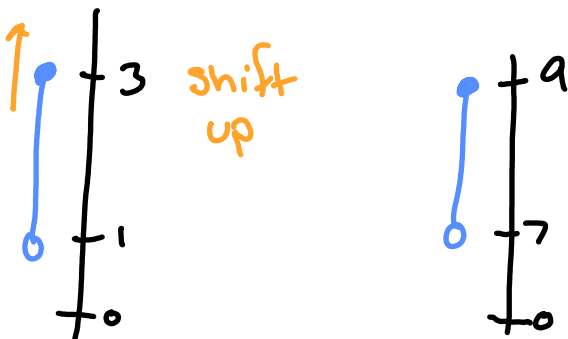
- i. What is the domain of $h(x)$? Write your answer using interval notation.



Answer:

$$[0, 9]$$

- ii. What is the range of $h(x)$? Write your answer using interval notation.



Answer:

$$[7, 9]$$