# Lesson 22 Practice Problems

1. Identify all values of $x$ that make the equation true.

a. $\frac{2x+1}{x} = \frac{1}{x-2}$

b. $\frac{1}{x+2} = \frac{2}{x-1}$

c. $\frac{x+3}{1-x} = \frac{x+1}{x+2}$

d. $\frac{x+2}{x+8} = \frac{1}{x+2}$


CC BY 2019 by Illustrative Mathematics®

2. Kiran is solving $\frac{2x-3}{x-1} = \frac{2}{x(x-1)}$ for $x$, and he uses these steps:

$$\frac{2x-3}{x-1} = \frac{2}{x(x-1)}$$
$$(x-1)\left(\frac{2x-3}{x-1}\right) = x(x-1)\left(\frac{2}{x(x-1)}\right)$$
$$2x-3 = 2$$
$$2x = 5$$
$$x = 2.5$$

He checks his answer and finds that it isn't a solution to the original equation, so he writes “no solutions.” Unfortunately, Kiran made a mistake while solving. Find his error and calculate the actual solution(s).

3. Identify all values of $x$ that make the equation true.

a. $x = \frac{25}{x}$

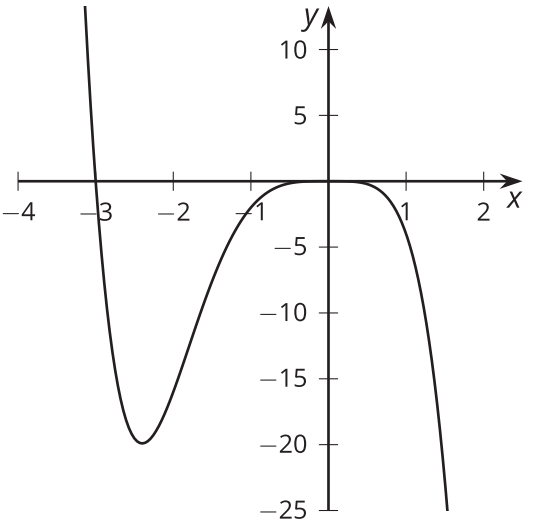
b. $x + 2 = \frac{6x-3}{x}$

c. $\frac{x}{x^2} = \frac{3}{x}$

d. $\frac{6x^2+18x}{2x^3} = \frac{5}{x}$


CC BY 2019 by Illustrative Mathematics®

4. Is this the graph of $g(x) = -x^4(x + 3)$ or $h(x) = x^4(x + 3)$? Explain how you know.




(From Unit 2, Lesson 10.)

5. Rewrite the rational function $g(x) = \frac{x-9}{x}$ in the form $g(x) = c + \frac{r}{x}$, where $c$ and $r$ are constants.

(From Unit 2, Lesson 18.)

6. Elena has a boat that would go 9 miles per hour in still water. She travels downstream for a certain distance and then back upstream to where she started. Elena notices that it takes her 4 hours to travel upstream and 2 hours to travel downstream. The river's speed is $r$ miles per hour. Write an expression that will help her solve for $r$.

(From Unit 2, Lesson 21.)


CC BY 2019 by Illustrative Mathematics®