Lesson 21 Practice Problems

1. Solve $x - 1 = \frac{x^2 - 4x + 3}{x + 2}$ for x.

2. Solve $\frac{4}{4-x} = \frac{5}{4+x}$ for x.

3. Show that the equation $\frac{1}{60} = \frac{2x+50}{x(x+50)}$ is equivalent to $x^2 - 70x - 3{,}000 = 0$ for all values of x not equal to 0 or -50. Explain each step as you rewrite the original equation.

4. Kiran jogs at a speed of 6 miles per hour when there are no hills. He plans to jog up a mountain road, which will cause his speed to decrease by r miles per hour. Which expression represents the time, t, in hours it will take him to jog 8 miles up the mountain road?

   A. $t = \frac{8-r}{6}$

   B. $t = \frac{8}{6+r}$

   C. $t = \frac{6+r}{8}$

   D. $t = \frac{8}{6-r}$

5. The rational function $g(x) = \frac{x+10}{x}$ can be rewritten in the form $g(x) = c + \frac{r}{x}$, where c and r are constants. Which expression is the result?

   A. $g(x) = x + \frac{10}{x}$

   B. $g(x) = 1 + \frac{10}{x}$

   C. $g(x) = x - \frac{10}{x+10}$

   D. $g(x) = 1 - \frac{1}{x+10}$

   (From Unit 2, Lesson 18.)

6. For each equation below, find the value(s) of x that make it true.

   a. $10 = \frac{1+7x}{7+x}$

   b. $0.2 = \frac{6+2x}{12+x}$

   c. $0.8 = \frac{x}{0.5+x}$

   d. $3.5 = \frac{4+2x}{0.5-x}$

(From Unit 2, Lesson 20.)

7. A softball player has had 8 base hits out of 25 at bats for a current batting average of $\frac{8}{25} = .320$.

   How many consecutive base hits does she need if she wants to raise her batting average to .400? Explain or show your reasoning.

(From Unit 2, Lesson 20.)