

25. **REASONING** Consider the equation $\frac{2}{x-a} = \frac{x}{x-a}$ where a is a real number.

For what value(s) of a does the equation have exactly one solution? no solution? *Explain* your answers.

26. **USING ANOTHER METHOD** Another way to solve a rational equation is to write each side of the equation as a single rational expression and then use the cross products property. Use this method to solve the

$$\text{equation } \frac{x}{x+1} + \frac{x-2}{2} = \frac{2x-1}{4}.$$

27. **SOLVING SYSTEMS OF EQUATIONS** Consider the following system:

$$y = 3x + 1$$

$$y = \frac{-5}{x-3} - 6$$

- Solve the system algebraically.
- Check your solution by graphing the equations.

28. **TEXAS TAKS REASONING** Let a be a real number. How many solutions does the equation $\frac{2}{x-a} = \frac{1}{x+a} + \frac{2a}{x^2-a^2}$ have?

- (A) Zero (B) One (C) Two (D) Infinitely many

29. **REASONING** Is the expression $\frac{x+a}{x+1+a}$ ever equivalent to $\frac{x}{x+1}$ for some nonzero value of a ? *Justify* your answer algebraically.

30. **CHALLENGE** Let a and b be real numbers. The solutions of the equation $ax + b = \frac{30}{x+2} - 1$ are -8 and 8 . What are the values of a and b ? *Explain* your answer.

PROBLEM SOLVING

EXAMPLE 4

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for Exs. 31–34

31. **ICE HOCKEY** In ice hockey, a goalie's save percentage (in decimal form) is the number of shots blocked by a goalie divided by the number of shots made by an opposing team. Suppose a goalie has blocked 160 out of 200 shots. How many consecutive shots does the goalie need to block in order to raise the save percentage to 0.840?

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32. **RUNNING TIMES** You are running a 6000 meter charity race. Your average speed in the first half of the race is 50 meters per minute faster than your average speed in the second half. You finish the race in 27 minutes. What is your average speed in the second half of the race?

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