EXAMPLES 5 and 6 on p. 585 for Exs. 31–36

SIMPLIFYING COMPLEX FRACTIONS **Simplify the complex fraction.**

31. $\dfrac{\frac{x}{3} - 6}{10 + \frac{4}{x}}$

32. $\dfrac{15 - \frac{2}{x}}{\frac{x}{5} + 4}$

33. $\dfrac{\frac{16}{x-2}}{\frac{4}{x+1} + \frac{6}{x}}$

34. $\dfrac{\frac{1}{2x-5} - \frac{7}{8x-20}}{\frac{x}{2x-5}}$

35. $\dfrac{\frac{3}{x-2} - \frac{6}{x^2-4}}{\frac{3}{x+2} + \frac{1}{x-2}}$

36. $\dfrac{\frac{1}{3x^2-3}}{\frac{5}{x+1} - \frac{x+4}{x^2-3x-4}}$

37. **TAKS REASONING** Write two different complex fractions that each simplify to $\dfrac{x-3}{x+4}$.

CHALLENGE **Simplify the complex fraction.**

38. $\dfrac{\frac{1}{x} - \frac{x}{x^{-1}+1}}{\frac{5}{x}}$

39. $\dfrac{\frac{3-2x}{x^3}}{\frac{2}{x^2} - \frac{1}{x^3+x^2}}$

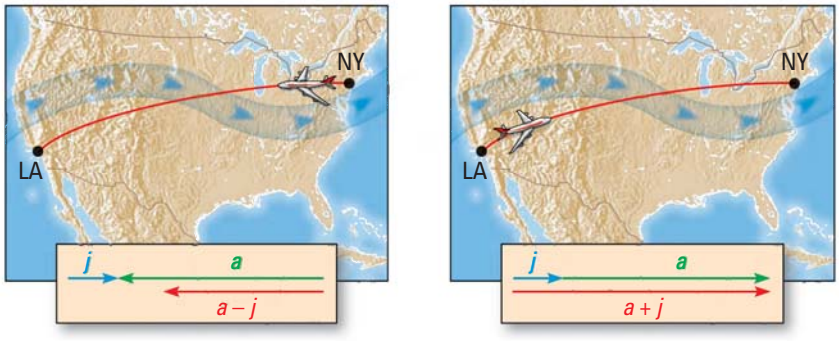
40. $\dfrac{3x^{-2} + (2x-1)^{-1}}{\frac{6}{x^{-1}+2} + 3x^{-1}}$

PROBLEM SOLVING

EXAMPLE 3 on p. 583 for Ex. 41

41. **JET STREAM** The total time T (in hours) needed to fly from New York to Los Angeles and back (ignoring layovers) can be modeled by the equation in the diagram, where d is the distance each way (in miles), a is the average airplane speed (in miles per hour), and j is the average speed of the jet stream (in miles per hour).

$$T = \frac{d}{a-j} + \frac{d}{a+j}$$



Rewrite the equation so that the right side is simplified. Then find the total time if $d = 2468$ miles, $a = 510$ mi/h, and $j = 115$ mi/h.

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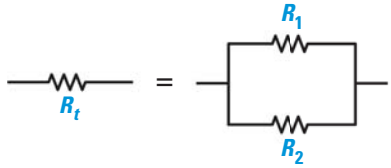
EXAMPLES 5 and 6 on p. 585 for Exs. 42–43

42. **ELECTRONICS** If two resistors in a parallel circuit have resistances R_1 and R_2 (both in ohms), then the total resistance R_t (in ohms) is given by the equation shown. Simplify the complex fraction. Then find the total resistance if $R_1 = 2000$ ohms and $R_2 = 5600$ ohms.



$$R_t = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2}}$$

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