

EXAMPLES
2, 3, and 4

on pp. 795–796
for Exs. 11–33

ERROR ANALYSIS Describe and correct the error in simplifying the rational expression or in stating the excluded values.

11. $\frac{2x^2 - x - 3}{2x^2 - 11x + 12}$

$$\begin{aligned} \frac{2x^2 - x - 3}{2x^2 - 11x + 12} &= \frac{(x+1)(2x-3)}{(2x-3)(x-4)} \\ &= \frac{(x+1)\cancel{(2x-3)}}{\cancel{(2x-3)}(x-4)} \\ &= \frac{x+1}{x-4} \end{aligned}$$

The excluded value is 4.



12. $\frac{2(x-5)}{(x-5)(x+2)}$

$$\begin{aligned} \frac{2(x-5)}{(x-5)(x+2)} &= \frac{2\cancel{(x-5)}}{\cancel{(x-5)}(x+2)} \\ &= \frac{2}{x+2} \\ &= \frac{\cancel{2}}{x+\cancel{2}} \\ &= \frac{1}{x+1} \end{aligned}$$

The excluded values are -2 and 5.



SIMPLIFYING EXPRESSIONS Simplify the rational expression, if possible. State the excluded values.

13. $\frac{10x}{25}$

14. $\frac{63}{18y}$

15. $\frac{-48a^2}{16a}$

16. $\frac{27b^2}{30b^5}$

17. $\frac{3c+33}{c+11}$

18. $\frac{d+8}{d-8}$

19. $\frac{2u-6}{3-u}$

20. $\frac{v+2}{v^2-4}$

21. $\frac{2}{f^2-9}$

22. $\frac{g+4}{g^2-16}$

23. $\frac{h+3}{h^2-h-12}$

24. $\frac{j-2}{j^2-6j+8}$

25. $\frac{-48w}{16w^2-40w}$

26. $\frac{12y^4}{12y^2+18y}$

27. $\frac{6z^2-24z}{2z^2-8z}$

28. $\frac{14x^2+21x}{2x^2+x-3}$

29. $\frac{s^2+16s+64}{s^2+7s-8}$

30. $\frac{t^2-4t-45}{2t^2-21t+27}$

31. $\frac{m+5}{m^3+10m^2+25m}$

32. $\frac{-n^2-3n+28}{3n^3+9n^2-84n}$

33. **WRITING** Are the rational expressions $\frac{x^2+x}{x^2-1}$ and $\frac{x^2}{x^2-x}$ equivalent?

Explain how you know. What are the excluded values, if any, of the rational expressions?

34. **TAKS REASONING** Write a rational expression whose excluded values are -3 and -5.

35. **TAKS REASONING** The expression $\frac{a}{x^2+5x-6}$ simplifies to $\frac{2x+5}{x+6}$. What is a ?

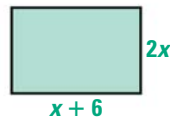
- (A) $2x^2+7x+5$ (B) $2x^2+5x-1$ (C) $2x^2+3x-5$ (D) $2x^2+7x-5$

GEOMETRY Write and simplify a rational expression for the ratio of the perimeter of the given figure to its area.

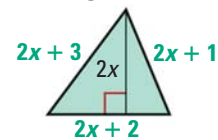
36. Square



37. Rectangle



38. Triangle



39. **CHALLENGE** Find two polynomials whose ratio simplifies to $\frac{3x-1}{2x+1}$ and whose sum is $5x^2+20x$. Describe your steps.