

7.1 In-class Practice

1. For each rational function, find all numbers that are not in the domain. Then give the domain, using interval notation.

a) $f(x) = \frac{5-x}{x-5}$

b) $f(x) = \frac{x+6}{x^2-8x+12}$

c) $f(x) = \frac{x^2-4x+3}{4x^2+9}$

d) $f(x) = \frac{x+5}{25x-x^3}$

2. Do the *concept check* problems on page 369 in your textbook.

3. Simplify each rational expression.

a) $\frac{48x^5}{56x^{11}}$

b) $\frac{18a-2}{22}$

c) $\frac{4y-12}{4y+12}$

d) $\frac{x^2-16}{x^2-8x+16}$

e) $\frac{y^2+8y-9}{y^2-5y+4}$

f) $\frac{a^2-b^2}{a^3-b^3}$

g) $\frac{7x-21}{63-21x}$

h) $\frac{2xy+2xw+y+w}{2xy+y-2xw-w}$

4. Multiply or divide as indicated.

a) $\frac{6p^2q^2}{27q^4} \cdot \frac{54p^5q^3}{21p^2}$

b) $\frac{(3x+1)^3}{2x-1} \cdot \frac{4x^2-4x+1}{9x^2+6x+1}$

c) $\frac{4a^2-12a+36}{27-3a^2} \div (a^3 + 27)$

d) $\frac{4x^3+24x^2}{x^2+4x-12} \div \frac{5x^2+20x}{x^2+2x-8}$

e) $\frac{x^2-2x}{x^2+x-2} \div \frac{x^2+2x-8}{x^4} \cdot \frac{x-1}{x^2+4x+4}$

f) $\frac{x^{2a}+x^a-6}{x^{2a}+6x^a+9} \div \frac{x^{2a}-4}{x^{2a}+2x^a-3}$

5. Given $f(x) = \frac{x^2-4}{x-5}$ and $g(x) = \frac{x^2-7x+10}{x+2}$, find $f(x) \cdot g(x)$ and $f(x) \div g(x)$.