

For what values of the variable is each rational expression undefined? ① Set denominator equal to 0.

② Solve.

$$a. \frac{n-2}{2-n} \quad \frac{2-n=0}{-n=-2}$$

$$\boxed{n=2}$$

$$c. \frac{10m}{m} \quad m=0$$

$$b. \frac{(w-2)(w-3)}{(w+5)(w-4)} = 0$$

$$w+5=0 \quad w-4=0$$

$$\begin{array}{r} -5 \quad -5 \\ \hline w = -5 \end{array} \quad \begin{array}{r} +4 \quad +4 \\ \hline w = 4 \end{array}$$

$$d. \frac{6}{x(x^2+2x+1)} = 0$$

$$\boxed{x=0} \quad x^2+2x+1=0$$

$$(x+1)(x+1)=0$$

$$x+1=0$$

$$\begin{array}{r} -1 \quad -1 \\ \hline x = -1 \end{array}$$

Write the common factor.  $\frac{a \cdot a \cdot a \cdot a \cdot b}{a \cdot b}$

$$a. \frac{5 \cdot 3}{2 \cdot 5} \quad 5$$

$$b. \frac{a^4 b}{ab} \quad ab$$

$$c. \frac{(r+2)(r+3)}{r(r+3)} \quad \boxed{r+3}$$

$$d. \frac{(x+3)^2}{x^2-9} = \frac{\boxed{(x+3)(x+3)}}{(x+3)(x-3)}$$

$$\boxed{x+3}$$

$$e. \frac{y^2 - y - 6}{y^2 - 9}$$

$$\begin{array}{r} 1 \cdot 6 \quad 2 \cdot 3 \\ 1 \cdot 9 \quad 3 \cdot 3 \end{array}$$

$$\frac{(y+2)(y-3)}{(y+3)(y-3)} \quad \boxed{y-3}$$

$$f. \frac{3-k}{k^2-2k-3}$$

$$\begin{array}{r} -1 \cdot (k-3) \\ 1 \cdot 3 \end{array}$$

$$\frac{(k+1)(k-3)}{(k+1)(k-3)} \quad \boxed{k-3}$$

Simplify and state restrictions on the domain.

a.  $\frac{x^3}{3x} = \frac{\cancel{x} \cdot \cancel{x} \cdot x}{3\cancel{x}}$   
 $\frac{3x}{3} = \frac{0}{3}$   
 $x = 0$   
 $\frac{x^2}{3}, x \neq 0$

b.  $\frac{2(x+y)}{8(x+y)^2}$   
 $\frac{\cancel{2}(x+y)}{2 \cdot 2 \cdot 2 \cancel{(x+y)}(x+y)}$   
 $x+y=0$   
 $x \neq -y$   
 $\frac{1}{4(x+y)}$   
 $x = -y$

c.  $\frac{a+4}{2a+8}$   
 $\frac{\cancel{(a+4)}}{2\cancel{(a+4)}}$   
 $a+4=0$   
 $-4 -4$   
 $a \neq -4$   
 $\frac{1}{2}, a \neq -4$

d.  $\frac{8w-12}{4}$   
 $\frac{\cancel{4}(2w-3)}{\cancel{4}}$   
 $2w-3$

e.  $\frac{h^2+h-12}{h^2+5h+4}$   
 $\frac{\cancel{(h+4)}(h-3)}{(h+1)\cancel{(h+4)}}$   
 $\frac{h-3}{h+1}, h \neq -1, -4$   
 $\frac{h+1=0}{-1 \quad -1}$   
 $h = -1$   
 $\frac{h+4=0}{-4 \quad -4}$   
 $h = -4$

- ① Factor
- ② Den = 0

$\frac{h-3}{h+1}, h \neq -1, -4$

p.542  
 (9-45) eod