

**EXERCISE A**

Simplify each expression. Remember, when in doubt...

1)  $\frac{30bc}{12b^3}$

2)  $\frac{5k-5}{k^2-1}$

3)  $\frac{3t-6}{2-t}$

4)  $\frac{3xyz}{4xz} \cdot \frac{6x^2}{3y^2}$

5)  $\frac{3}{5d} \div \left( -\frac{9}{15df} \right)$

6)  $\frac{3x^2}{x+2} \cdot \frac{x+2}{x^2}$

7)  $\frac{4t^2-4}{9(t+1)^2} \cdot \frac{3t+3}{2t-2}$

8)  $\frac{\frac{m^3}{3m}}{\frac{m^4}{9n^2}}$

9)  $\frac{w+4}{9} \div \frac{w^2-16}{3x+15}$

10)  $\frac{x^2-3x}{x+7} \cdot \frac{x^2+12x+35}{x^2+2x-15}$

11)  $\frac{4}{y^3} \cdot \frac{3y}{16} \div \frac{15}{y}$

**EXERCISE B**

Simplify each expression. Remember, when in doubt...

12)  $\frac{-3x^2y}{9x^2y^2}$

13)  $\frac{(-5mn^2)^3}{5m^2n^4}$

14)  $\frac{a^2+2a+1}{2a^2+3a+1}$

15)  $\frac{a^2-4}{6-3a}$

16)  $\frac{-9cd}{8xw} \cdot \frac{-4w}{15c}$

17)  $\frac{2x^3y}{z^5} \div \left( \frac{4xy}{z^3} \right)^2$

18)  $\frac{w^2-11w+24}{w^2-18w+80} \cdot \frac{w^2-15w+50}{w^2-9w+20}$

19)  $\frac{b-5}{7z} \cdot \frac{14z^2}{5-b}$

20)  $\frac{2x^3y}{11x} \div \frac{10y^2}{33}$

21)  $\frac{2m-2n}{5} \cdot \frac{m^2}{2} \div \frac{m^2-m}{25}$

$$22) \frac{r^2 + 2r - 8}{r^2 + 4r + 3} \div \frac{r - 2}{3r + 3}$$

$$23) \frac{\frac{2y}{y^2 - 4}}{\frac{3}{y^2 - 4y + 4}}$$

24) Use the formula:  $d = rt$ . An airplane is traveling at the rate of 500mph for a time of  $(6 + x)$  hours. A second plane travels at a rate of  $(540 + 90x)$  mph for a time of 6 hours. (a) write a rational expression to represent the ratio of the distance by the first airplane to the second. (b) Simplify the expression. (c) Under what condition is the rational expression undefined? What would be happening to the two airplanes?



## EXERCISE C

Name the undefined (or excluded or restricted) values for each rational expression. Remember, when in doubt...

$$25) \frac{7}{(x-5)(x+11)}$$

$$26) \frac{y+9}{3y(2y-1)}$$

$$27) \frac{-19}{8a+12}$$

$$28) \frac{b^2+1}{b^2-4b-45}$$

### ANSWERS:

$$1) \frac{5c}{2b^2}$$

$$7) \frac{2}{3}$$

$$15) -\frac{a+2}{3}$$

$$23) \frac{2y(y-2)}{3(y+2)}$$

$$3) -3$$

$$9) \frac{x+5}{3(w-4)}$$

$$17) \frac{xz}{8y}$$

$$25) x \neq -11, 5$$

$$5) -f$$

$$11) \frac{1}{20y}$$

$$19) -2z$$

$$27) a \neq -3/2$$

$$13) -25mn^2$$

$$21) \frac{5m(m-n)}{m-1}$$