

period

Name

Date

7.9

Simplifying Rational Expressions.

$$1) \frac{6p-36}{18} \\ \frac{\cancel{6}(p-6)}{\cancel{6} \cdot 3}$$

$$\frac{p-6}{3}$$

$$2) \frac{q+1}{q^2+4q+3}$$

$$\frac{q+1}{(q+1)(q+3)}$$

$$\frac{1}{(q+3)} \quad \begin{matrix} q \neq -1 \\ q \neq -3 \end{matrix}$$

$$3) \frac{8b^5}{64b^4}$$

$$\frac{\cancel{8} b \cancel{b} \cancel{b} \cancel{b} \cancel{b}}{\cancel{8} \cdot \cancel{8} \cancel{b} \cancel{b} \cancel{b}}$$

$$\frac{b}{8} \quad b \neq 0$$

$$4) \frac{x+1}{x^2-1}$$

$$\frac{\cancel{(x+1)}}{\cancel{(x+1)}(x-1)}$$

$$\frac{1}{(x-1)} \quad x \neq -1, 1$$

$$5) \frac{56c-14}{24c-6}$$

$$\frac{7(8c-2)}{3(8c-2)}$$

$$\frac{7}{3} \quad c \neq \frac{1}{4}$$

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

$$\frac{3(b-2)}{(b+2)(b-2)}$$

$$\frac{3}{(b+2)} \quad b \neq 2, -2$$

$$7) \frac{x^2 - 144}{3x^2 - 36x}$$

$$3x^2 - 36x$$

$$\frac{(x+12)(x-12)}{3x(x-12)}$$

$$3x(x-12)$$

$$\frac{x+12}{3x} \quad x \neq 0, 12$$

$$8) \frac{n^2 - n - 12}{n^2 - 4n}$$

$$n^2 - 4n$$

$$\frac{(n+3)(n-4)}{n(n-4)}$$

$$n(n-4)$$

$$\frac{n+3}{n}$$

$$9) \frac{3x^2 + 19x - 14}{x^2 - 49}$$

$$x^2 - 49$$

$$\frac{(3x-2)(x+7)}{(x+7)(x-7)}$$

$$(x+7)(x-7)$$

$$\frac{3x-2}{x-7} \quad x \neq -7, 7$$

10)

$$\frac{25y^2 - 121}{15y - 33}$$

$$15y - 33$$

$$\frac{(5y+11)(5y-11)}{3(5y-11)}$$

$$3(5y-11)$$

$$\frac{5y+11}{3} \quad y \neq \frac{11}{5}$$

$$11) \frac{99y^2 - 24y - 1}{9y - 1}$$

$$9y - 1$$

$$\frac{(9y+1)(11y+1)}{(9y-1)}$$

$$(9y-1)$$

$$(11y+1) \quad y \neq \frac{11}{9}$$

12) The length of rectangle is $3h+2$ and the width is $9h+6$. What is the ratio of its length to its width?

$$\frac{\text{length}}{\text{width}} = \frac{3h+2}{9h+6} = \frac{3h+2}{3(3h+2)} = \frac{1}{3} \quad (h \neq -\frac{2}{3})$$

13) The length of a rectangle is x^2-9 . Its width is $x-3$. What is a simplified expression for the length.

$$\frac{x^2-9}{x-3} = \frac{(x+3)(x-3)}{(x-3)} = x+3 \quad (x \neq 3)$$

14) The length of a rectangle is x^2-9 . Its width is $x-3$. What is a simplified expression for the length.

$$\frac{x^2-9}{x-3} = \frac{(x+3)(x-3)}{(x-3)} = x+3 \quad (x \neq 3)$$

$$15) \frac{x^2 - 9}{2x^2 - 6x}$$

$$2x^2 - 6x$$

$$\frac{(x+3)(x-3)}{2x(x-3)}$$

$$2x(x-3)$$

$$\frac{(x+3)}{2x} \quad \begin{matrix} x \neq 0 \\ x \neq 3 \end{matrix}$$

$$16) \frac{n^2 p^2}{n^2 p}$$

$$n^2 p$$

$$p \quad p \neq 0$$

$$16) \frac{n^2 p^2}{n^2 p}$$

$$\frac{\cancel{n} \cancel{n} p}{\cancel{n} \cancel{n} p}$$

$$17) \frac{2x^2 + 17x - 9}{x^2 - 81}$$

$$x^2 - 81$$

$$\frac{(2x-1)(x+9)}{(x+9)(x-9)}$$

$$(x+9)(x-9)$$

$$\frac{2x-1}{x-9}$$

$$x \neq 9, -9$$

$$18) \frac{4d^4 - 6d^3 - 4d^2}{d^2 - 2d}$$

$$d^2 - 2d$$

$$2d(2d^2 - 3d - 2)$$

$$d(d-2)$$

$$2d^2(2d+1)(d-2)$$

$$d(d-2)$$

$$2d(2d+1)$$

$$4d^2 + 2d$$

$$d \neq 0 \\ d = 2$$

$$19) \frac{11y^2 + 35y - 36}{y^2 - 16}$$

$$\frac{(1y + 4)(11y - 9)}{(y + 4)(y - 4)}$$

$$\frac{11y - 9}{y - 4} \quad y \neq -4, 4$$

20) The ~~con~~ length of a pentangle is $8n + 24$ and the width is ~~con~~ $12n + 28$ what is the ratio of its length to its width.

$$\frac{8n + 24}{12n + 28}$$

$$\frac{8n + 24}{12n + 28} = \frac{4(2n + 6)}{4(3n + 7)} = \frac{2n + 6}{3n + 7}$$

~~(APB)~~

$$n \neq \frac{7}{3}$$

