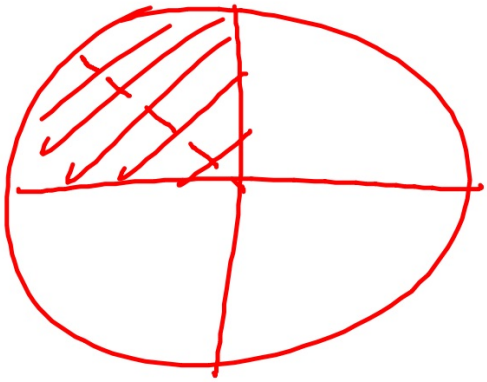
25.) $\frac{x-4}{x-3} \cdot \frac{2x-1}{x+4}$

$$\frac{(x-4)(2x-1)}{(x-3)(x+4)}$$

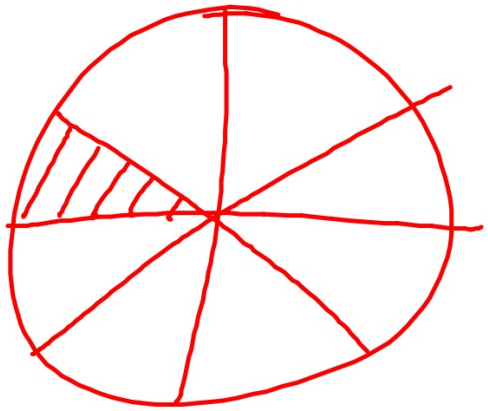
27) $\dfrac{4x^2-20x+25}{x^2-4x} \cdot \dfrac{3x-12}{2x-5}$

$\dfrac{(2x-5)(2x-5)}{x(x-4)} \cdot \dfrac{3(x-4)}{2x-5}$

$\dfrac{3(2x-5)}{x}$



$\frac{1}{4}$



$\frac{1}{8}$

$\frac{2}{8} + \frac{1}{8} = \frac{3}{8}$

# *A2: Adding and Subtracting Rational Expressions*

| **Adding or Subtracting Rational Expressions** |
| --- |
| **Step 1** Identify a common denominator. |
| **Step 2** Multiply each expression by an appropriate form of 1 so that each term has the common denominator as its denominator. |
| **Step 3** Write each expression using the common denominator. |
| **Step 4** Add or subtract the numerators, combining like terms as needed. |
| **Step 5** Factor as needed. |
| **Step 6** Simplify as needed. |

*Perform the indicated operation. Simplify if possible.*

a) $\frac{2}{5}+\frac{1}{3}$

$3\cdot\frac{2}{5}+\frac{1}{3}\cdot\frac{5}{5}$

$3\cdot 5$

$\frac{6}{15}+\frac{5}{15}$

$\frac{11}{15}$

*Perform the indicated operation. Simplify if possible.*

b) $\frac{1}{2} - \frac{3}{10}$

$\frac{5}{10} - \frac{3}{10}$

$\frac{2}{10}$

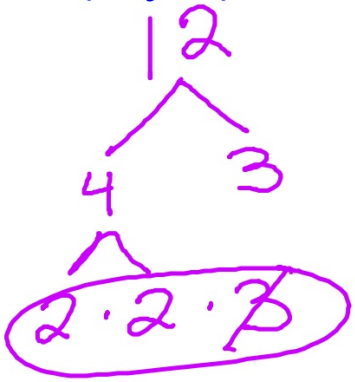
$\frac{1}{5}$

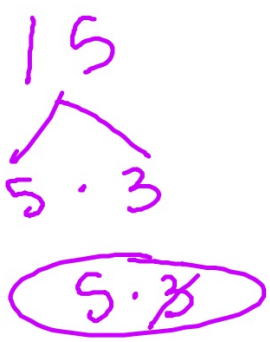
*Perform the indicated operation. Simplify if possible.*

c) $\frac{5}{12} + \frac{4}{15}$ $\cdot 5$ $\cdot 4$

$\frac{25}{60} + \frac{16}{60}$

$\frac{41}{60}$




$3 \cdot 2 \cdot 2 \cdot 5$

60

*Perform the indicated operation. Simplify if possible.*

*d)* $\dfrac{2}{3x} + \dfrac{x}{3}$

$\dfrac{(6 + x^2)}{3x}$

*Perform the indicated operation. Simplify if possible.*

e) $\frac{1}{2x} - \frac{3}{5x^2}$

$5x \cdot 1 - 3 \cdot 2$

$5x \cdot 2x \quad 5x^2$

$\frac{5x - 6}{10x^2}$

$x \cdot 2 \cdot 5 \cdot x$

$10x^2$

*Perform the indicated operation. Simplify if possible.*

*f)* $\frac{5}{2x} + \frac{1}{3x}$

$3 \cdot \frac{5}{3 \cdot 2x} + \frac{1 \cdot 2}{3x \cdot 2}$

$\frac{15+2}{6x}$

$\frac{17}{6x}$

*Perform the indicated operation. Simplify if possible.*

a) $\dfrac{4x-5}{3x+1}+\dfrac{x+4}{3x+1}$

$$\frac{(5x-1)}{(3x+1)}$$

*Perform the indicated operation. Simplify if possible.*

b) $\dfrac{2x+7}{x^2+2x-15} - \dfrac{x+10}{x^2+2x-15}$

$$\frac{2x+7-(x+10)}{(x+5)(x-3)}$$

$$\frac{2x+7-x-10}{(x+5)(x-3)} = \frac{x-3}{(x+5)(x-3)} = \boxed{\frac{1}{x+5}}$$

*Perform the indicated operation. Simplify if possible.*

c) $\dfrac{7}{x+2}+\dfrac{3}{2x+4}$

~~$x+2$~~ $2(~~x+2~~)$

$2(x+2)$ : LCD

$\dfrac{2\cdot 7}{2(x+2)}+\dfrac{3}{2(x+2)}$

$\dfrac{14+3}{2(x+2)}=\dfrac{17}{2(x+2)}$

*Perform the indicated operation. Simplify if possible.*

a) $\dfrac{7}{2x+3} - \dfrac{3}{x+5}$

$(2x+3)\quad(x+5)$

$(2x+3)(x+5)$

$\dfrac{7(x+5)-3(2x+3)}{(2x+3)(x+5)}$

$\dfrac{7x+35-6x-9}{(2x+3)(x+5)} = \dfrac{x+26}{(2x+3)(x+5)}$

*Perform the indicated operation. Simplify if possible.*

e) $\dfrac{x+3}{x^2-x-2}+\dfrac{x}{x-2}$

$(x-2)(x+1) \mid (x-2)$

$(x-2)(x+1)$

$\dfrac{x+3}{(x-2)(x+1)}+\dfrac{x(x+1)}{x-2(x+1)}$

$\dfrac{x+3+x(x+1)}{(x-2)(x+1)}$

$\dfrac{x+3+x^2+x}{(x-2)(x+1)} = \dfrac{x^2+2x+3}{(x-2)(x+1)}$

$$\frac{2 \cdot 3}{2 \cdot 7} + \frac{5}{14}$$

$$\frac{6+5}{14}$$

$$\frac{11}{14}$$

*Perform the indicated operation. Simplify if possible.*

*f)* $\dfrac{x}{x^2-4}-\dfrac{10x}{x-2}$

$\dfrac{x}{(x-2)(x+2)} - \dfrac{10x(x+2)}{x-2(x+2)}$

$\dfrac{x-10x(x+2)}{(x-2)(x+2)} = \dfrac{x-10x^2-20x}{(x-2)(x+2)}$

$\dfrac{-10x^2-19x}{(x-2)(x+2)}$

g.) $\frac{(x-5)1}{(x-5)} - \frac{x+1}{x-5}$

$$\frac{x-5-(x+1)}{(x-5)}$$

$$\frac{x-5-x-1}{x-5} = \frac{-6}{x-5}$$

h.) $\frac{2x^2(x-1)}{(x+6)(x+1)(x-1)} + \frac{3(x+6)}{(x+1)(x-1)}$

$$\frac{2x^2(x-1)+3(x+6)}{(x+6)(x-1)(x+1)}$$

$$\frac{2x^3-2x^2+3x+18}{(x+6)(x-1)(x+1)}$$

*Simplify and state the excluded values.*

a) $\dfrac{x^3 - 2x^2 + x - 2}{x^4 + x^2 - 2}$

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

EV: $\pm 1$

*Simplify and state the excluded values.*

b) $\dfrac{x^2-9}{x^3+3x^2}$

$$\frac{X-3}{X^2}$$

$$X \neq 0, -3$$

*Perform the indicated operation and simplify.*

c) $\dfrac{4x^2-1}{x^2-4} \cdot \dfrac{x-2}{2x-1}$

$\dfrac{2x+1}{x+2}$

*Perform the indicated operation and simplify.*

*d)* $$\frac{x^2-4}{2x^2-5x+2} \div \frac{2x^2-3x-2}{4x^2-1}$$

$$\frac{X+2}{X-2}$$