Download this PDF to your computer and go to
www.livescribe.com/player
On iOS, open the PDF in Livescribe+.

6.1 (con't) lecture notes pg. 92

Multiplying Rational Expressions

$$\frac{P}{Q} \cdot \frac{R}{S} = \frac{PR}{QS} \qquad QS \neq 0$$

$$Q \neq 0 \qquad S \neq 0$$

(31) Simplify and Multiply.

$$\frac{x^2 - 6x - 16}{3x^2 - 192} \cdot \frac{x^2 + 16x + 64}{4x^2 + 40x + 64}$$

$$\frac{(x+2)(x-8)}{3(x-8)(x+8)} \cdot \frac{(x+8)(x+8)}{4(x+2)(x+8)}$$

$$\frac{\cancel{(x+2)}^{1}\cancel{(x-8)}^{1}\cancel{(x+8)}^{1}\cancel{(x+8)}^{1}}{(3)\cancel{(x-8)}_{1}\cancel{(x+8)}_{1}(4)\cancel{(x+2)}_{1}\cancel{(x+8)}_{1}} = \frac{1}{12}$$

livescribe

6.1 (con't) lecture notes pg. 92

Multiplying Rational Expressions

$$\frac{P}{Q} \cdot \frac{R}{S} = \frac{PR}{QS} \qquad QS \neq 0$$

$$Q \neq 0 \qquad S \neq 0$$

(31) Simplify and Multiply.

$$\frac{x^2 - 6x - 16}{3x^2 - 192} \cdot \frac{x^2 + 16x + 64}{4x^2 + 40x + 64}$$

$$\frac{(x+2)(x-8)}{3(x-8)(x+8)} \cdot \frac{(x+8)(x+8)}{4(x+2)(x+8)}$$

$$\frac{\cancel{(x+2)}\cancel{(x-8)}\cancel{(x+8)}\cancel{(x+8)}}{(3)\cancel{(x-8)}\cancel{(x+8)}(4)\cancel{(x+2)}\cancel{(x+8)}} = \frac{1}{12}$$

Dividing Rational Expressions

Steps

1) Factor out

2) Keep, change, Flip

3) Simplify

(42) $\dfrac{7x^2-13x-2}{y^2+2y-3} \cdot \dfrac{y^2+4y-5}{28x^2+11x+1} \div \dfrac{5x^2-9x-2}{8x^2-2x-2}$

$\dfrac{(x-2)(7x+1)}{(y-1)(y+3)} \cdot \dfrac{(y+5)(y-1)}{(7x+1)(4x+1)} \div \dfrac{(5x+1)(x-2)}{(4x+1)(2x-1)}$

$\dfrac{(x-2)(7x+1)(y+5)(y-1)}{(y-1)(y+3)(7x+1)(4x+1)} \cdot \dfrac{(4x+1)(2x-1)}{(5x+1)(x-2)}$

$\boxed{\dfrac{(y+5)(2x-1)}{(y+3)(5x+1)}}$

Final Study Skills Assignment!

Due: ① July 20th (Learning Styles)

② Actual Experience → My initials by July 2nd

DO NOT WAIT till the Last Minute!

- for June, no appointments needed
- For July, appointments only

§6.2 Adding and Sub. Rational Expression

lecture notes pg. 94

Same denominator are like rational expressions

Add/Sub like rational Expressions

6.2.1 Two like rational expressions

$\frac{x+2}{x+4}$ and $\frac{x+3}{x+4}$

$\frac{3x}{x^2}$ and $\frac{5x}{x^2}$

$\frac{-7x}{3x}$ and $\frac{20x}{3x}$

Subtracting

$$\frac{P}{Q} - \frac{R}{Q} = \frac{P-(R)}{Q}$$

(12) Subtract and Simplify

$$\frac{x^2+x}{x+5} - \frac{25+x}{x+5}$$

$$= \frac{x^2+x-(25+x)}{x+5}$$

$$= \frac{x^2+x-25-x}{x+5} = \frac{x^2-25}{x+5}$$

can this be simplified?

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

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

Turning Unlike Rational Expressions into Equivalent like Rational Expressions (LCD)

Recall

$$\frac{1}{10} + \frac{1}{14}$$

$$= \frac{1 \cdot 7}{2 \cdot 5 \cdot 7} + \frac{1 \cdot 5}{2 \cdot 7 \cdot 5} = \frac{7}{70} + \frac{5}{70} = \frac{12}{70} = \frac{6}{35}$$

(20) $\frac{c}{c^2-d^2}$ and $\frac{1}{c^2-2cd-d^2}$

Find the LCD

$$\frac{c}{c^2-d^2} + \frac{1}{c^2-2cd-d^2}$$

$$\frac{c}{(c+d)(c-d)(d)} \quad \frac{(c-d)}{(c-d)^2} + \frac{1}{(c-d)^2} \cdot \frac{c+d}{c+d}$$

LCD: $(c-d)(c-d)(c+d)$

or

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

Adding and subtracting Unlike Rat. Exp

(41) Add/Sub and Simplify

$$\frac{1}{x+3} - \frac{15x}{3x+9} + \frac{5}{2x+6}$$

$$\frac{1 \cdot 3 \cdot 2}{(x+3)\,3 \cdot 2} - \frac{15x \cdot 2}{3(x+3) \cdot 2} + \frac{5 \cdot 3}{2(x+3) \cdot 3}$$

$$\frac{6}{6(x+3)} - \frac{30x}{6(x+3)} + \frac{15}{6(x+3)}$$ ← do NOT distribute!

$$\frac{6-30x}{6(x+3)} + \frac{15}{6(x+3)}$$

$= \frac{6 - 30x + 15}{6(x+3)}$

$= \frac{-30x + 21}{6(x+3)}$

can this be simplified? factor to find out?

if leading term is negative the LCD is negative

$= \frac{-3(10x - 7)}{6(x+3)} = \frac{-1(10x-7)}{2(x+3)}$

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

- Watch out for the sign errors
- Practice, Practice, Practice

(48) Preform indicated operation. Simplify.

$$\left(\frac{x}{x+3} - \frac{x}{x-3}\right) \div \frac{x}{3x+9}$$

$$\left(\frac{x}{x+3}\cdot\frac{(x-3)}{(x-3)} - \frac{x}{x-3}\cdot\frac{(x+3)}{(x+3)}\right) \div \frac{x}{3x+9}$$

$$\left(\frac{x(x-3)}{(x+3)(x-3)} - \frac{x(x-3)}{(x-3)(x+3)}\right) \div \frac{x}{3x+9}$$

$$\frac{x(x-3)-x(x+3)}{(x+3)(x-3)} \div \frac{x}{3x+9}$$

$$\frac{x^2-3x-x^2-3x}{(x+3)(x-3)} \div \frac{x}{3x+9}$$

do not use FOIL

$$\frac{-6x}{(x+3)(x-3)} \div \frac{x}{3x+9}$$

$$\frac{-6x}{(x+3)(x-3)} \div \frac{x}{3(x+3)}$$

Keep change flip

$$\frac{-6x}{(x+3)(x-3)} \cdot \frac{3(x+3)}{x}$$

$$\frac{(-6x)(3)(x+3)}{x(x+3)(x-3)} = \frac{(-18)(x)}{1\,x(x-3)}$$

$$\boxed{\frac{-18}{(x-3)}}$$