Announcements

1) Today is the last Extra Credit Session in 4-202 4:00 - 5:15 pm. We will review Scientific Notation and Exponent Rules.

2) All extra credit sessions this semester were recorded, so it is not too late to earn the maximum extra credit in the class.

→ All of § 6.4 - Dividing Polynomials (pp 84-86)
→ Start § 6.5 - Solving Equations Containing Radical Rational Expressions (p 81)

⇒ The Chapter 6 Test is in 3 days.
To study, complete the Chap 6 Review problems over and over until you can complete each problem correctly, quickly, confidently, with no help and know why each problem is solved that way.

Worksheets - Maria Angelica in 7.242
Today: 1:00 - 2:00
Wed: 9:00 - 10:00 and 1:00 - 2:30
Thu: 9:00 - 10:00 and 1:00 - 2:30

\[ \text{Divide Polynomials} \]
\[ \frac{15x^2y^2 + 18x^2y + 9y^2}{3x^2y} = \frac{15x^2y^2}{3x^2y} + \frac{18x^2y}{3x^2y} - \frac{9y^2}{3x^2y} \]

\[ \text{Solve: } \frac{x - x}{x^2} = \frac{1}{x} \]
\[ \frac{5y + 6y - 3y}{x} \quad \text{find answer} \]
Announcements

1. Today is the last Extra Credit Session in 4-202 4:00-5:15 pm. We will review Scientific Notation and exponent rules.

2. All extra credit sessions this semester were recorded, so it is not too late to earn the maximum extra credit in the class.

→ All of §6.4 - Dividing Polynomials (pp. 84-86)
→ Start §6.5 - Solving Equations Containing Radical Rational Expressions (p. 87)

⇒ The Chapter 6 Test is in 7 days.
   To study, complete the Chap 6 Review problems over and over until you can complete each problem correctly, quickly, confidently, with no help and know why each problem is solved that way.

⇒ Workshops - Maria Angelica in 7-242
   Today: 1:00-2:30
   Wed: 9:00-10:00 and 1:00-2:30
   Thu: 9:00-10:00 and 1:00-2:30

\[
\text{Divide Polynomials}
\]

\[
\frac{6 x^4 y^2 + 18 x y^2 - 9 y^2}{3 x^2 y}
\]

SW: \( x = \frac{x^4}{x^2} = \frac{1}{x^2} \times x \times x \)

\[
\frac{5 y + \frac{6 y}{x} - \frac{8 y}{x^2}}{x}
\]

Find answer
Dividing polynomial:

\[
\begin{align*}
\text{one term in the denominator} & \rightarrow \text{use \ \textit{draw the heart} method} \\
\text{more than one term in the denominator} & \rightarrow \text{use polynomial long division method}
\end{align*}
\]

\[
\begin{array}{c}
\text{divisor} \quad 2 \quad \text{quotient} \\
\begin{array}{c}
1 \\
\hline
2 \\
\hline
6
\end{array}
\end{array}
\]

\[
\begin{array}{c}
\text{numerator} \quad 2 \quad 9 \quad 6 \\
\begin{array}{cc}
-2 & 8 \\
\hline
6 & 14
\end{array}
\end{array}
\]

\[
\begin{array}{c}
\text{quotient} + \text{remainder} \\
\begin{array}{c}
2 \\
\hline
14
\end{array}
\end{array}
\]

\[
\text{answer} \quad 2x + 2
\]

6.4.9 Use long division:

\[
\frac{2x^2 + 9x + 7}{x+1}
\]

\[
\begin{array}{c}
x+1 \left\lfloor \frac{2x^2 + 9x + 7}{x+1} \right. \\
\hline
\begin{array}{c}
x^2 + 7 \quad \text{(quotient)} \\
\begin{array}{cc}
x+1 & \hline
2x^2 + 9x + 7 - 2x^2 - 2x \\
\hline
7x + 7 = 7(x+1) \\
\hline
= 0
\end{array}
\end{array}
\end{array}
\]

\[
\text{final answer} \quad 2x + 7
\]

\[
\frac{2x + 7}{x+1}
\]
6.4.9 Use long division.

\[
\frac{2x^5 - 9x^3 - 8x^2 - 8x - 8}{x^2 + 1}
\]

**NUM**:

\[
\begin{array}{c|cccc}
\hline
x^5 & x^4 & x^3 & x^2 & x^1 \\
\hline
2x^3 & -11x & -8 \\
-2x^3 & -11x & -8 \\
\hline
\end{array}
\]

**DEN**:

\[
\begin{array}{c|cccc}
\hline
x^2 & x \hline
2x^3 & 2x^3 & 2x^3 \\
8x^2 & -8x^2 & -8x^2 & -8x^2 \\
11x & 11x & 11x & 11x \\
\hline
-2x & -2x & -2x & -2x \\
-3x & -3x & -3x & -3x \\
\hline
\end{array}
\]

**Final answer: \( 2x^3 - 11x - 8 + 3x \)**

6.4.13 Use long division.

\[
\frac{8x^3 + 23x^2 + 9x + 36}{2x + 6}
\]

**NUM**:

\[
\begin{array}{c|cccc}
\hline
x^3 & x^2 & x \hline
4x^2 & 2x & 6 \\
2x + 6 & 8x^2 & 23x^2 & 9x & 36 \\
-8x^3 & -23x^2 & -9x & -36 \\
\hline
1x^2 & 13x & 54 \\
1x^2 & 13x & 54 \\
\hline
12x & 36 \\
12x & 36 \\
\hline
\end{array}
\]

**Final answer: \( 4x^2 - 1x + 6 \)**

\[
\frac{6(2x+6)}{2x}
\]

\[
\frac{6}{2} \times \frac{2x+6}{x} = 3x + 18
\]
Solving Equations Containing Rational Expressions

Step 1: find what the answer cannot be

Steps 2 to 4: find what the answer might be

Step 5: find what the answer is

6.545 Solve \[ \frac{3}{x-12} - \frac{5x}{x^2-144} = \frac{2}{x+12} \]

1. What answer cannot be:

\[ \frac{x-12 \neq 0}{x \neq 12} \quad \frac{x^2-144 \neq 0}{(x-12)(x+12) \neq 0} \quad \frac{x+12 \neq 0}{x \neq -12} \]

So, \( x \neq 12 \) and \( x \neq -12 \)

2. 3 4. What answer might be:

\[ \frac{3}{x-12} - \frac{5x}{x^2-144} = \frac{2}{x+12} \]

\[ \frac{3(x+12)}{(x-12)(x+12)} - \frac{5x}{(x+12)(x-12)} = \frac{2(x+12)}{(x+12)(x-12)} \]

\[ \frac{(x+12)(x-12)}{(x+12)(x-12)} \cdot \left( \frac{3(x+12)}{(x-12)(x-12)} - \frac{5x}{(x+12)(x-12)} \right) = \frac{2(x-12)}{(x+12)(x-12)} \]

Multiply both sides by the LCD
\[ \frac{3}{x+12} - \frac{5}{x} = \frac{2}{x-12} \]

\[ 3x - 36 - 5x = 2x - 24 \]

\[-2x + 36 = 2x - 24 \]

\[ 36 + 24 = 2x + 2x \]

\[ \frac{60}{4} = \frac{4x}{4} \]

\[ 15 = x \quad \rightarrow \quad (x = 15) \quad \text{the answer is 15} \]

\[ \boxed{15} \]

**What answer is**

we can use our calculator to check.

**Left side**  \quad **Right side**  \quad  \text{by calculator}

\[ \frac{3}{2+15} = \frac{2}{2+15} \]

**Otherwise, we must check on paper:**

\[ \frac{3}{15-12} - \frac{5(15)}{15^2-144} = \frac{2}{15+12} \]

\[ \frac{3}{3} - \frac{75}{225-144} = \frac{2}{22} \]

\[ 1 - \frac{75}{81} = \frac{2}{22} \]

\[ 1 - \frac{25}{27} = \frac{2}{22} \]

\[ \frac{27}{27} - \frac{25}{27} = \frac{2}{22} \]

\[ \frac{27}{27} - \frac{25}{27} = \frac{2}{22} \]

\[ \frac{27}{27} = \frac{2}{22} \]