Mat 011 Agenda   Day 27: 03/31/03

- Worksheets
- Review for Test#3, S225
- PowerPoint Lecture 27
- Quiz on Rational Fractions and Exponents

Homework:  Topic 25, S225 and review test
5. $7x^4 x^3$

$7x^7$
6. \((7x^4)^3\)

\[343x^{12}\]
\[
7. \left( \frac{x^5}{2} \right)^{-3} = \left( \frac{2}{x^5} \right)^3 = \frac{8}{x^{15}}
\]

\[
\left( x^5 \right)^3 = 3x^5
\]

\[
\left( x^5 \right)^3 = x^{15}
\]
\[
8. \quad \frac{x^{-3}}{(3x^4)^{-5}} = \frac{(3x^4)^5}{x^3} = \frac{3^5 x^{20}}{x^3} = 243 x^{17}
\]
\[
9. \quad \frac{5x^{-3}}{20x^4} = \frac{1}{5} \cdot \frac{1}{4x^7} = \frac{1}{20x^4 \cdot x^3} = \frac{1}{4x^7}
\]

\[
\frac{(5x)^{-3}}{20x^4} = \frac{1}{(20x^4) \cdot (5x)^3} = \frac{1}{20x^4 \cdot 125x^3} = \frac{1}{2500x^7}
\]
\[ \chi^{-2} = \frac{1}{\chi^2} \]
Simplify: \[ \frac{2}{9x} \div \frac{4x^5}{1} \]

\[ \frac{\frac{2}{9x}}{\frac{4x^5}{1}} = \frac{1}{18x^6} \]
Simplify: \[ \frac{3}{4x^2} + \frac{8}{3x} \cdot 4x \]

\[ \frac{9 + 32x}{12x^2} \]
Simplify: \[9 \cdot 6x + \frac{4x}{9} = \frac{54x + 4x}{9} = \frac{58x}{9}\]
Solve for \( x \): 
\[
\frac{4}{3} \frac{(4x - 5)^3}{2} \left( x - 2 \right)^{1/2} = -1
\]

\[
4(4x - 5) - 3(x - 2) = -1
\]

\[
16x - 20 - 3x + 6 = -1
\]

\[
13x - 14 = -1
\]

\[
x = 1
\]
5. Solve for $x$:

$$\frac{9}{18} \left( x - 4 \right)^{\frac{2}{9}} \left( x - 3 \right)^{\frac{8}{9}} = \frac{5}{18}$$

\[ 9(x - 4) - 2(x - 3) = 5 \]

\[ 9x - 36 - 2x + 6 = 5 \]

\[ 7x - 30 = 5 \]

\[ 7x = 35 \]

\[ x = 5 \]
4. A printer can print 7 pages every 3 minutes. How long will it take to print 81 pages?

\[
\frac{7 \text{ pages}}{3 \text{ minutes}} = \frac{81 \text{ pages}}{x \text{ minutes}}
\]

\[
7x = \frac{243}{7}
\]

\[
x = 34.7 \text{ min}
\]
Which is a better buy?

77 ounces of laundry detergent for $2.10 or
92 ounces of laundry detergent for $2.70

\[
\frac{77}{2.10} = 36.6 \text{ oz/}$
\[
\frac{92}{2.70} = 34.0703 \text{ oz/}$
\[
\frac{2.10}{77} = 0.0272 \text{ oz/}
\[
\frac{2.70}{92} = 0.0293 \text{ oz/}
\]
2. Find the monthly payments on a 5 year car loan of $16,500 at 9% annual interest.

\[ P = A \left( \frac{i}{1 - (1+i)^{-n}} \right) \]

\[ l = \frac{.09}{12} = .0075 \]

\[ h = 5 \times 12 = 60 \text{ months} \]

\[ = 16,500 \left( \frac{.0075}{1 - (1.0075)^{-60}} \right) = 16,500 \left( \frac{.0075}{1 - .6386} \right) = 16,500 \left( \frac{.0075}{.3613} \right) = 16,500 (0.02075) = 342.51 \]
There are 2,000 bacteria present initially in a culture. The culture grows at 17% each day.
a. Complete the table.

<table>
<thead>
<tr>
<th>Time</th>
<th>Calculations</th>
<th>Number of Bacteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Day</td>
<td></td>
<td>2000</td>
</tr>
<tr>
<td>1 day later</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>