

Objectives

March 31st, 2010

- 1) Go over the basics of rational functions
to review
- 2) Cover Division of Polynomials
- 3) Solving Polynomial Functions

$$23) \quad \frac{5}{4x^2y^5}, \quad \frac{3}{10x^2y^4}, \quad \frac{x}{6y^4}$$

$$4x^2y^5 \rightarrow 2 \cdot 2$$

$$10x^2y^4 \rightarrow 2 \cdot 5$$

$$6y^4 \rightarrow 2 \cdot 3$$

$$\left. \begin{array}{l} \\ \\ \end{array} \right\} 2 \cdot 2 \cdot 5 \cdot 3 x^2 y^5$$

$$60x^2y^5$$

$$26) \frac{1}{5x^3}, \frac{4}{x^2+3x-28}, \frac{11}{10x^2-30x}$$

$$\begin{array}{l} 5x^3 \\ x^2+3x-28 \\ 10x^2-30x \end{array} \left. \vphantom{\begin{array}{l} 5x^3 \\ x^2+3x-28 \\ 10x^2-30x \end{array}} \right\} \begin{array}{l} \boxed{5x^3} \\ \boxed{(x+7)(x-4)} \\ \boxed{10x} \boxed{(x-3)} \end{array}$$

$$10x^3(x+7)(x-4)(x-3)$$

1, (20)

$$\frac{2x+3}{x-1} \div \frac{x^2-6x-7}{x^2-1}$$

$$\frac{2x+3}{\cancel{x-1}} \cdot \frac{(x-1)\cancel{(x+1)}}{(x-7)\cancel{(x+1)}}$$

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

$$\begin{aligned} (a^3 - b^3) &= (a - b)(a^2 + ab + b^2) \\ x^3 - 8 &= (x - 2)(x^2 + 2x + 4) \\ (2)^3 & \end{aligned}$$

$$31) \frac{x}{9-x^2} - \frac{2}{5x-15}$$

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

$$= \frac{5x + 2x + 6}{-5(x-3)(x+3)}$$

$$= \frac{7x + 6}{-5(x-3)(x+3)}$$

Without using your calculator

Divide 4321 by 32

$$\begin{array}{r} 135 \frac{1}{32} \\ 32 \overline{) 4321} \\ \underline{32} \\ 112 \\ \underline{96} \\ 161 \\ \underline{160} \\ 1 \end{array}$$

Divide

$$\boxed{2x^2 - x + 4}$$

$$5x \overline{) 10x^3 - 5x^2 + 20x}$$

$$\frac{10x^3}{5x} = 2x^2$$

$$\begin{array}{r} 10x^3 \\ \hline 0 - 5x^2 \\ - 5x^2 \\ \hline 0 + 20x \\ 20x \\ \hline 0 \end{array}$$

$$\begin{array}{r} \boxed{2x-5} \\ \boxed{x+2} \overline{) 2x^2 - x - 10} \\ \underline{-2x^2 + 4x} \\ -5x - 10 \\ \underline{+5x + 10} \\ 0 \end{array}$$

$$(x+2)(2x-5) = 2x^2 - x - 10$$

$$\boxed{3x - 2}$$

$$\begin{array}{r} X+3 \overline{) 3x^2 + 7x - 6} \\ \underline{-3x^2 - 9x} \\ -2x - 6 \\ \underline{+2x + 6} \\ 0 \end{array}$$

$$\begin{array}{r}
 2x - 3 - \frac{3}{3x-5} \\
 3x-5 \overline{) 6x^2 - 19x + 12} \\
 \underline{-6x^2 + 10x} \\
 -9x + 12 \\
 \underline{+9x + 15} \\
 -3
 \end{array}$$

$$(3x-5) \left(2x - 3 - \frac{3}{3x-5} \right)$$

$$6x^2 - 10x - 9x + 15 - 3$$

$$6x^2 - 19x + 12$$

$$3x^4 + 2x^3 - 8x + 6 \text{ by } x^2 - 1$$

$$x^2 - 1 \overline{) 3x^4 + 2x^3 + 0x^2 - 8x + 6}$$

$$\begin{array}{r} -3x^4 \quad 0 \quad +3x^2 \\ \hline \end{array}$$

$$2x^3 + 3x^2 - 8x$$

$$\begin{array}{r} -2x^3 \quad 0 \quad +2x \\ \hline \end{array}$$

$$3x^2 - 6x + 6$$

$$\begin{array}{r} -3x^2 \quad \quad +3 \\ \hline \end{array}$$

$$6x + 9$$

$$3x^2 + 2x + 3 \quad \begin{array}{l} -6x + 9 \\ \hline x^2 - 1 \end{array}$$

$$\begin{array}{r}
 9x^2 - 6x + 4 \\
 \hline
 3x + 2 \) \ 27x^3 + 0x^2 + 0x + 8 \\
 \underline{- 27x^3 + 18x^2}
 \end{array}$$

$$(3x)^3 + (2)^3$$

$$-18x^2 + 0x$$

$$27x^3 + 8$$

$$\underline{+ 18x^2 + 12x}$$

$$(3x+2)(9x^2-6x+4)$$

$$\begin{array}{r}
 12x + 8 \\
 \underline{- 12x + 8} \\
 \hline
 0
 \end{array}$$

0

$$2x^3 - x^2 - 13x + 1 \quad \text{by} \quad x - 3$$

$$\begin{array}{r|rrrr} 3 & 2 & -1 & -13 & 1 \\ & \downarrow & 6 & 15 & 6 \\ \hline & 2 & 5 & 2 & \boxed{7} R \end{array}$$

$$\boxed{2x^2 + 5x + 2} + \frac{7}{x-3}$$

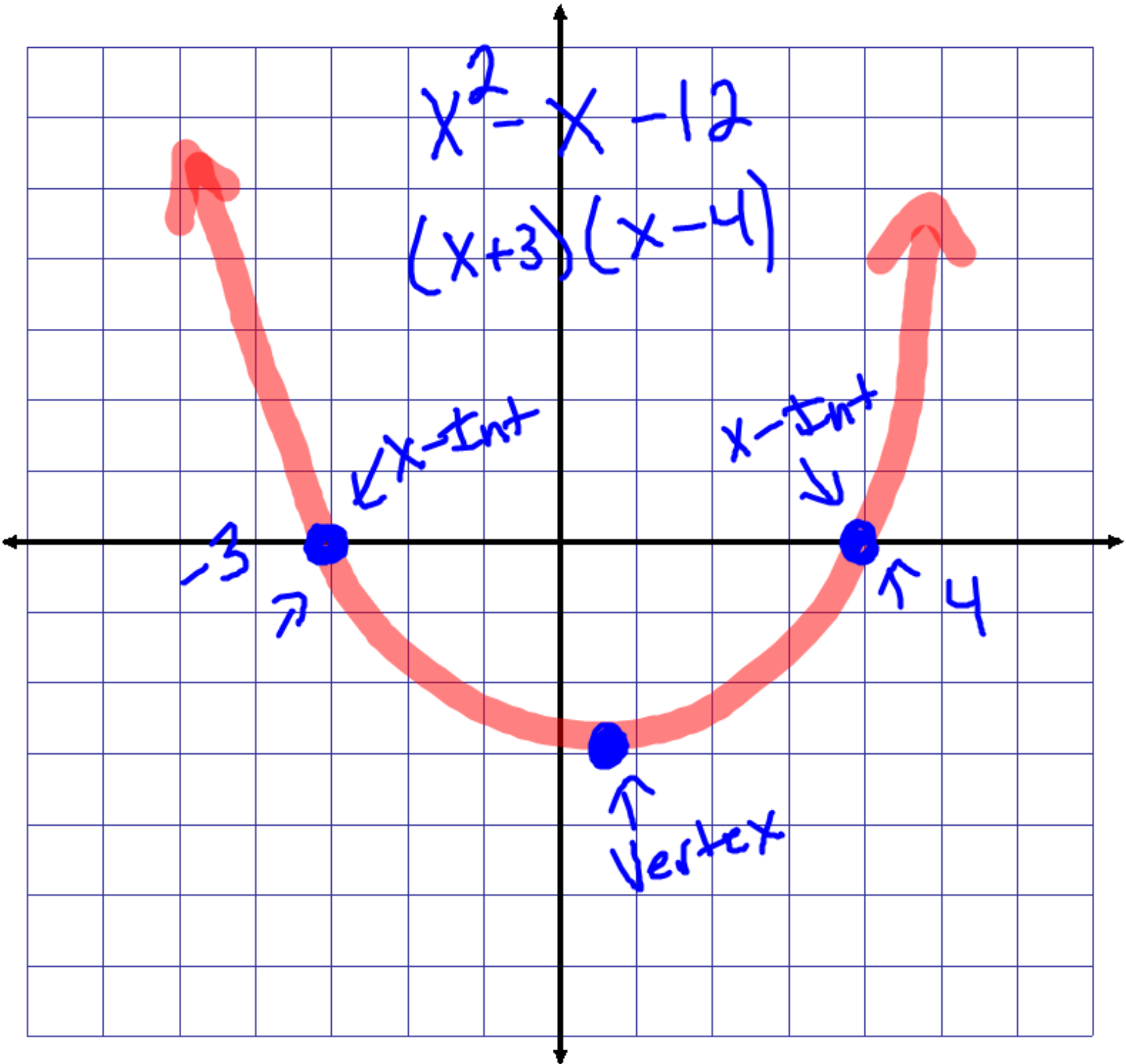
$$\text{Evaluate } 2x^3 - x^2 - 13x + 1 \quad x = 3$$

$$x+2$$

$$x^4 - 2x^3 - 11x + 5$$

$$\begin{array}{r|rrrrr} -2 & 1 & -2 & 0 & -11 & 5 \\ & & -2 & +8 & -16 & 54 \\ \hline & 1 & -4 & +8 & -27 & +59 \end{array}$$

$$x^3 - 4x^2 + 8x - 27 + 59/x + 2$$



Pg 446

32, 35, 42

Hw Pg 479-480

49-62