

Mth112 Thurs. 10-4-12 Class Notes

POLYNOMIAL Long Division

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$$\begin{array}{r} 2x^2 - x - 15 \\ x - 3 \end{array}$$

$$\begin{array}{r} \boxed{2x + 5} \\ x - 3 \overline{) 2x^2 - x - 15} \\ \underline{-(2x^2 - 6x)} \\ 5x - 15 \\ \underline{-(5x - 15)} \\ 0 \end{array}$$

$$(x - 3)(2x + 5) \stackrel{?}{=} 2x^2 - x - 15$$

Multiply to check
the factors



Ex 2
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$$\underline{2y^3 = y^2 + 5y + 5}$$

$$2y+1$$

$$\boxed{y^2 - y + 3 + \frac{2}{2y+1}}$$

$$2y+1 \overline{) 2y^3 - y^2 + 5y + 5}$$

$$- (\cancel{2y^3} + y^2)$$

$$- 2y^2 + 5y$$

$$- (\cancel{-2y^2} - y)$$

$$6y + 5$$

$$- (6y + 3)$$

$$\underline{2}$$

EX 3
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$$\frac{2x^3 - x + 5}{x-1}$$

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

$$x-1 \overline{) 2x^3 + 0x^2 - x + 5}$$

$$-(2x^3 - 2x^2)$$

$$+2x^2 - x$$

$$-(+2x^2 + 2x)$$

$$+x + 5$$

$$-(x - 1)$$

$$6$$

(42)
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$$\frac{3y^4 + y^3 - 8y^2 - 3y - 5}{3y^2 + y + 1}$$

$$\begin{array}{r}
 3y^2 + y + 1 \overline{) 3y^4 + y^3 - 8y^2 - 3y - 5} \\
 \underline{-(3y^4 + y^3 + y^2)} \\
 +0y^3 - 9y^2 - 3y - 5 \\
 \underline{-(0 + 0 + 0)} \\
 -9y^2 - 3y - 5 \\
 \underline{-(-9y^2 - 3y - 3)} \\
 -2
 \end{array}$$

OPTIONAL
BRING
the -5
down -5

LOOK
Tricky
Step

Try THIS in Wolfram Alpha

$$\boxed{(3y^4 + y^3 - 8y^2 - 3y - 5) / (3y^2 + y + 1)}$$