

2.3 More Synthetic Division 9/17/19

Before starting division, the polynomial you are dividing must be in order and have every term.

EX 1: $(x^4 + 4x^3 + 36x - 45 - 4x^2) \div (x-3)$

$x^4 + 4x^3 - 4x^2 + 36x - 45 \div (x-3)$

$x-3=0$

$+3 \quad +3$

$x=3$

$$\begin{array}{r|rrrrr} 3 & 1 & 4 & -4 & 36 & -45 \\ & & \downarrow & \downarrow & \downarrow & \downarrow \\ & & 3 & 21 & 51 & 216 \\ \hline & & 1 & 7 & 17 & 87 & \boxed{216} \end{array} \rightarrow \text{remainder}$$

$1x^3 + 7x^2 + 17x + 87 + \frac{216}{x-3}$

EX 2: $(10h^3 + 4h^2 - 26) \div (h+2)$

$10h^3 + 4h^2 + 0h - 26 \div (h+2)$

$h+2=0$

$-2 \quad -2$

$h=-2$

$$\begin{array}{r|rrrr} -2 & 10 & 4 & 0 & -26 \\ & & \downarrow & \downarrow & \downarrow \\ & & -20 & 32 & -64 \\ \hline & & 10 & -16 & 32 & \boxed{-90} \end{array} \rightarrow \text{remainder}$$

$10h^2 - 16h + 32 + \frac{-90}{h+2}$