

# Warmup:

$$(3x^2 + 14x + 8) \div (3x + 2) = \boxed{(x + 4)}$$

$$\begin{array}{r}
 \phantom{3x+2} \overline{) 3x^2 + 14x + 8} \\
 \underline{-3x^2 + 2x} \phantom{+ 8} \\
 12x + 8 \\
 \underline{-12x + 8} \\
 0
 \end{array}$$

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

$$x(3x+2)$$

$$\frac{12x}{3x} = 4$$

$$4(3x+2)$$

$$\underline{\underline{(9y^4 + 14y^2 - 8)}} \div (3y + 2) = \underline{\underline{3y^3 - 2y^2 + 6y - 4}}$$

$$\begin{array}{r}
 3y^3 - 2y^2 + 6y - 4 \\
 \hline
 3y + 2 \overline{) 9y^4 + 0y^3 + 14y^2 + 0y - 8} \\
 \underline{-9y^4 + 6y^3} \phantom{+ 0y^2 + 0y - 8} \\
 -6y^3 + 14y^2 \phantom{+ 0y - 8} \\
 \underline{+6y^3 + 4y^2} \phantom{+ 0y - 8} \\
 18y^2 + 0y \phantom{- 8} \\
 \underline{-18y + 12y} \phantom{- 8} \\
 -12y - 8 \\
 \underline{+12y + 8} \\
 0
 \end{array}$$

$$1) (3m^3 + 5m^2 - 4) \div (3m + 5) = m^2 - \frac{4}{3m+5}$$

$$\begin{array}{r} 3m+5 \overline{) 3m^3 + 5m^2 + 0m - 4} \\ \underline{-3m^3 + 5m^2} \phantom{-4} \\ 0m \phantom{-4} \\ \underline{-4} \end{array}$$

$$2) (4k^3 - 14k^2 - 10k + 5) \div (4k - 2)$$

$$\begin{array}{r} 4k-2 \overline{) 4k^3 - 14k^2 - 10k + 5} \\ \underline{-4k^3 + 2k^2} \phantom{-10k + 5} \\ -12k^2 - 10k \phantom{+ 5} \\ \underline{+12k^2 + 6k} \phantom{+ 5} \\ -16k + 5 \\ \underline{+16k + 8} \\ -3 \end{array}$$

$$3) (3x^3 + 11x^2 - 5x - 6) \div (x + 4)$$

$$4) (2v^3 + 8v^2 - 20v + 5) \div (2v - 2)$$

# Polynomial Word Puzzle

# HW #5: Polynomial Long Division