

Precalculus

2-04 Dividing Polynomials

Long Division

Done like long division with _____

$$\frac{y^4 + 2y^2 - y + 5}{y^2 - y + 1}$$

$$\frac{x^3 + 4x^2 - 3x + 10}{x + 2}$$

Synthetic Division

- Shortened form of long division for dividing by a _____
- Only when dividing by _____

$$(-5x^5 - 21x^4 - 3x^3 + 4x^2 + 2x + 2)/(x + 4)$$

$$(y^5 + 32)(y + 2)^{-1}$$

Factor Theorem

If $f(x)$ is divided by $(x - k)$ and remainder is _____, then $(x - k)$ is a _____ of $f(x)$

Show that $(x + 3)$ is a factor of $x^3 - 19x - 30$. Then find the remaining factors.