

Answer on Question #42689, Math, Calculus

Task: Find the remainder when $f(x)$ is divided by $(x - k)$:

$$f(x) = 4x^3 - 6x^2 + 3x + 1; k = -2$$

Solution:

$4x^3 - 6x^2 + 3x + 1$	$x + 2$
$4x^3 + 8x^2$	$4x^2 - 14x + 31$
$-14x^2 + 3x$	
$-14x^2 - 28x$	
$31x + 1$	
$31x + 62$	
-61	

$$\text{So, } \frac{f(x)}{x - k} = \frac{4x^3 - 6x^2 + 3x + 1}{x + 2} = 4x^2 - 14x + 31 - \frac{61}{x + 2}.$$

Answer: the remainder is -61.