

F&T
Remainder Theorem

Name _____

1.) Given the function $f(x) = x^3 - 28x - 48$, find $f(-4)$.

$$(-4)^3 - 28(-4) - 48$$

$$\boxed{0}$$

2.) Determine if $x + 4$ is a factor of $x^3 - 28x - 48$. **Explain your answer.**

$$\begin{array}{r|rrrr} -4 & 1 & 0 & -28 & -48 \\ & \downarrow & -4 & 16 & 48 \\ \hline & 1 & -4 & -12 & 0 \end{array}$$

$x+4$ is a factor because the division has a remainder of 0.

3.) Determine if $x + 3$ is a factor of $x^4 - 10x^2 - 2x + 4$. **Explain your answer.**

$$\begin{array}{r|rrrrr} -3 & 1 & 0 & -10 & -2 & 4 \\ & \downarrow & -3 & 9 & 3 & -3 \\ \hline & 1 & -3 & -1 & 1 & 1 \end{array}$$

$x+3$ is not a factor because the division has a remainder of 1.

4.) When $g(x)$ is divided by $x - 4$, the remainder is -14 . What conclusion about $g(x)$ is true?

(a) One of the zero's for $g(x)$ is 4.

(b) One of the zero's for $g(x)$ is -14 .

(c) $g(4) = -14$

(d) $g(-14) = 4$

5.) The graph of $p(x)$ is shown.

What is the remainder when $p(x)$ is divided by $x + 5$?

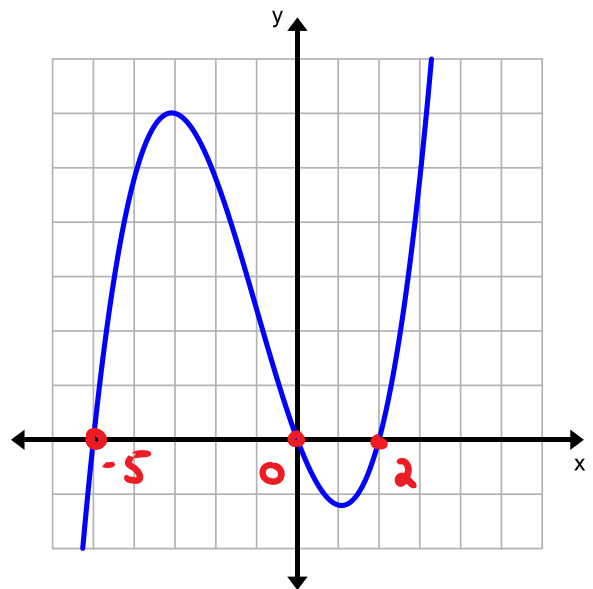
(a) -5

(b) 0

(c) 2

(d) 5

$$y = x(x+5)(x-2)$$



6.) If $x - 1$ is a factor of $x^3 - kx^2 + 2x$, what is the value of k ?

(a) 0

(b) 2

(c) 3

(d) -3

$$(1)^3 - k(1)^2 + 2(1) = 0$$

$$1 - k + 2 = 0$$

$$-k = -3$$

$$k = 3$$