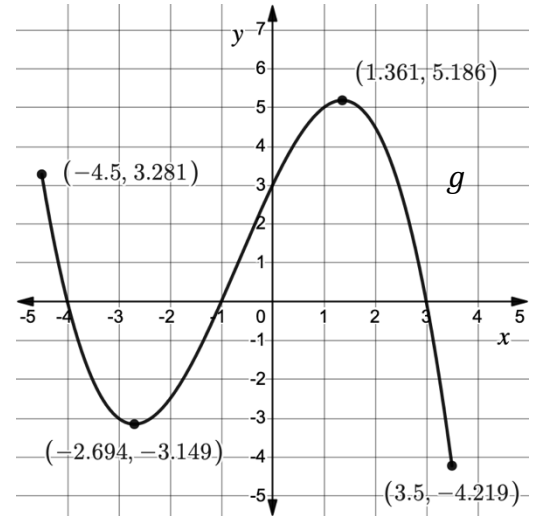


Set A:

The graph of a polynomial function $y = g(x)$ is shown to the right on the closed interval $[-4.5, 3.5]$.

Read each statement below and determine if it is true or false.



- g has a negative instantaneous rate of change at $x = 3$.
- $x + 4$, $x + 1$, and $x - 3$ are factors of $g(x)$.
- g is an odd function.
- On the interval $[-4.5, 3.5]$, g has a relative and absolute minimum at $x = -2.694$.
- The leading coefficient of the equation for $g(x)$ is negative.
- g is increasing on the interval $(-3.149, 5.186)$.
- The graph of g has a point of inflection between $x = -1$ and $x = 0$.
- g has an absolute maximum of 5.186 on the interval $[-4.5, 3.5]$.
- The average rate of change of g on equal length subintervals of $[0, 3.5]$ is decreasing.

Count how many statements you marked as TRUE: _____

Set B:

Consider the polynomial $f(x) = (x - a)^3(x - b)^2(x - c)$, for real numbers a , b , and c .

Read each statement below and determine if it is true or false.

- f is a polynomial of degree 5.
- f has only real zeros.
- The graph of f passes through the x -axis at $x = c$, but bounces off the x -axis at $x = b$ and $x = a$.
- The graph of f has 5 turning points.
- $\lim_{x \rightarrow \infty} f(x) = \infty$
- $\lim_{x \rightarrow -\infty} f(x) = -\infty$
- The graph of f has a y -intercept at $y = -(a * b * c)$.
- $x - a$ divides $f(x)$ evenly.
- f has only positive zeros.

Count how many statements you marked as TRUE: _____

Set C:

Consider the rational function $h(x) = \frac{x^2 - 8x + 15}{2x^2 - 4x - 6}$

Read each statement below and determine if it is true or false.

- The domain of h is $(-\infty, -1) \cup (-1, \infty)$.
- The graph of h has a hole at $(3, -\frac{1}{4})$.
- The graph of h has a horizontal asymptote at $y = 1$.
- h has zeros at $x = 3$ and $x = 5$.
- The graph of h has a y-intercept at $y = -\frac{5}{2}$.
- For $x < -1$, $h(x) > 0$.
- $h(x)$ has a vertical asymptote at $x = -1$ and $x = 3$.
- $\lim_{x \rightarrow -\infty} h(x) = \frac{1}{2}$.
- h is increasing whenever $-1 < x < \infty$.

Count how many statements you marked as TRUE: _____

Set D:

Let $j(x) = x^3 + 5x^2 + 81x + 405$. It is known that $x = -5$ is one of the zeros of $j(x)$.

Read each statement below and determine if it is true or false.

- The graph of j has 3 turning points.
- j has 3 complex zeros.
- Dividing $j(x)$ by $x + 5$ gives no remainder.
- The graph of j has a y-intercept of $y = 405$.
- $\lim_{x \rightarrow -\infty} j(x) = -\infty$
- j has two imaginary zeros.
- The graph of j will bounce off the x-axis at $x = -5$.
- $(x - 9i)$ is one of the factors of $j(x)$.
- The zero at $x = -5$ has an odd multiplicity.

Count how many statements you marked as TRUE: _____