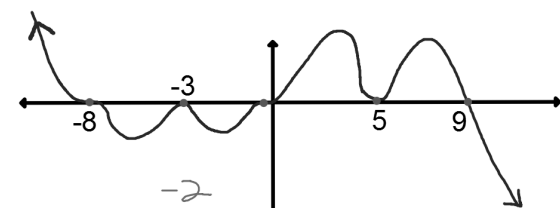


Write the EXACT equation of this polynomial, using the proper value of a , given the graph passes through the point $(-2, -1862784)$.



$$y = a(x+8)^3(x+3)^2(x-5)^2(x-9)$$

$$-1862784 = a(-2)^3(6)^3(1)^2(-7)^2(-11)$$

$$\frac{-1862784}{981392} = -2 = a$$

Use the given zeros to write a possible equation of the polynomial in STANDARD FORM:

Zeros: 5(double), 0 (double), and 2(single)

$$x^2(x-5)^2(x-2)$$

	x^2	$-10x$	$+25$
x	x^3	$-10x^2$	$+25x$
-2	$-2x^2$	$+20x$	-50

$$x^2(x^2-10x+25)(x-2)$$

$$x^2(x^3-12x^2+45x-50)$$

$$= x^5-12x^4+45x^3-50x^2$$

Know your vocabulary!!

Name used because of a polynomial's degree.

Largest exponent is 0	Name: Constant
Largest exponent is 1	Name: Linear
Largest exponent is 2	Name: Quadratic
Largest exponent is 3	Name: Cubic

Name used because of a polynomial's # of terms.

1 Term	Name: Monomial
2 Terms	Name: Binomial
3 Terms	Name: Trinomial

7 and 9 are factors of 2457. The other two factors are prime numbers. Find these other two factors.

$$\begin{array}{l}
 2457 \div 7 = 351 \\
 351 \div 9 = 39 \\
 \textcircled{3 \text{ \& } 13}
 \end{array}
 \quad
 \begin{array}{l}
 2457 \div 9 = 273 \\
 273 \div 7 = 39 \\
 \textcircled{3 \text{ \& } 13}
 \end{array}
 \quad
 \begin{array}{l}
 7 \cdot 9 = 63 \\
 2457 \div 63 = 39 \\
 \textcircled{3 \text{ \& } 13}
 \end{array}$$

The solutions to a polynomial equation are -6, 1.5 and 4.

$$\rightarrow 3/2$$

What are the factors of this polynomial?

$$(x+6)(x-4)(2x-3)$$

-1 and 2 are solutions of the equation below.

$$x^4 - x^3 + 2x^2 - 4x - 8 = 0$$

The other two solutions are imaginary.

How could you find the other two?

Divide this polynomial by the factors (x+1) and (x-2).

This will leave you a Quadratic which you can then either factor or use Quadratic Formula to find the remaining two solutions.

Do the following using long division without a calculator. Give any remainder as a fraction

$$\frac{58,372}{23}$$

$$\begin{array}{r}
 2537 \text{ R} = 21 \\
 23 \overline{) 58372} \\
 \underline{46} \\
 123 \\
 \underline{115} \\
 87 \\
 \underline{69} \\
 182 \\
 \underline{161} \\
 21
 \end{array}$$

A diagram illustrating a long division problem. The divisor is 8, the dividend is 120, and the quotient is 15. Arrows point from the labels to their respective parts of the equation.

$$\begin{array}{r} 15 \\ 8 \overline{) 120} \end{array}$$

divisor

dividend

quotient