

Algebra 2 - Zeros and Graphs of Polynomial Functions - Test

Common Core A-APR.B.3, F-IF.C.7c · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

This 45-minute test on zeros and graphs of polynomial functions has 9 questions worth 20 points in total. The questions move from direct skills to multi-step problems. Show your work, because partial credit is given for a correct setup and sound reasoning.

About this test

- Grade: Algebra 2
- Chapter: Zeros and Graphs of Polynomial Functions
- Standards: A-APR.B.3, F-IF.C.7c
- Time: 45 minutes
- Total: 20 points

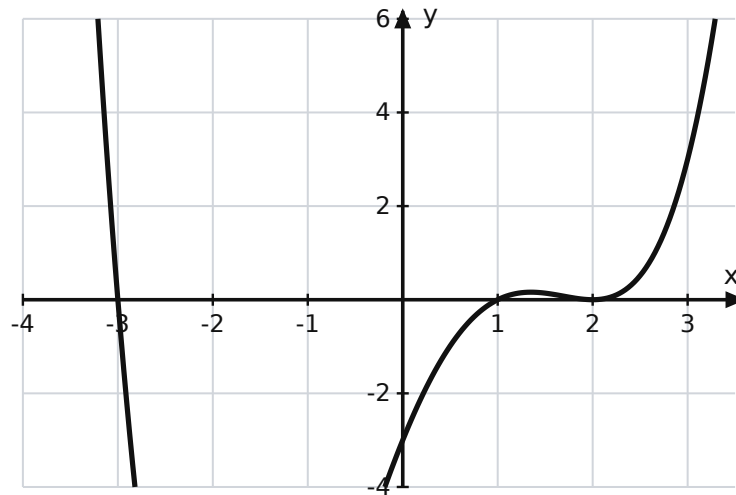
Question 1 - Zeros from factors [2 pts]

Find the zeros of $g(x) = x(2x+3)(x-7)^2$ and state each multiplicity.

Question 2 - Factor and solve [3 pts]

Find all zeros of $x^3 - 4x^2 - 9x + 36$ by factoring.

Question 3 - Multiplicity on a graph [2 pts]



Graph of a quartic with leading coefficient $\frac{1}{4}$.

The graph of a quartic polynomial crosses the x-axis at -3 and 1 and touches it at 2 . State the multiplicity of each zero and write a possible factored form (leading coefficient $\frac{1}{4}$).

Question 4 - End behavior [2 pts]

Describe the end behavior of each function.

- $f(x) = 5x^3 - 2x$ (1 point)
- $g(x) = -x^4 + 6x^2$ (1 point)

Question 5 - Rational Root Theorem [3 pts]

Use the Rational Root Theorem to find all zeros of $x^3 + x^2 - 10x + 8$.

Question 6 - Polynomial from a graph point [2 pts]

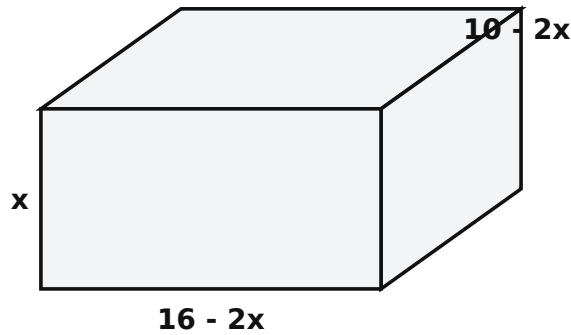
A cubic has zeros -2 , 1 , and 3 and passes through $(0, -12)$. Write its equation in factored form.

Question 7 - Sign chart [2 pts]

x	-2	0	3	5
f(x)	?	?	?	?

Evaluate $f(x) = (x + 1)(x - 2)(x - 4)$.

For $f(x) = (x+1)(x-2)(x-4)$, complete the table and state whether the graph is above or below the x-axis at each x.

Question 8 - Box volume [2 pts]

Open box with height x .

A box is made from a 10-inch by 16-inch sheet by cutting a square of side x from each corner. The volume is $V = x(16 - 2x)(10 - 2x)$. Find the zeros of V and the interval of x values that make a box.

Question 9 - Complex zero [2 pts]

A cubic polynomial with real coefficients has zeros 4 and $1 + 2i$. Find the third zero and write the polynomial with leading coefficient 1 in factored form.