

Precalculus - Polynomial Functions and Their Graphs - Test

Common Core F-IF.C.7c, A-APR.B.3, F-IF.B.4 · maths-pdf.fr/en/

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

This 20-point test covers degree, end behavior, zeros and multiplicity, graphs, inequalities and a volume model (F-IF.C.7c, A-APR.B.3). You have 45 minutes. Show your work.

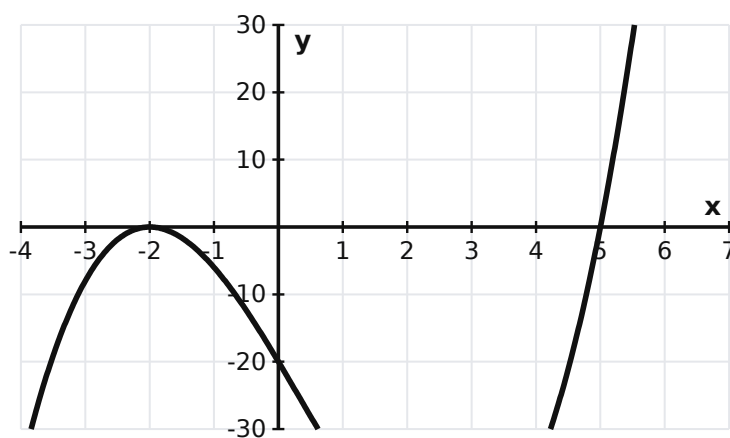
About this test

- Grade: Precalculus
- Chapter: Polynomial Functions and Their Graphs
- Standards: F-IF.C.7c, A-APR.B.3, F-IF.B.4
- Time: 45 minutes
- Total: 20 points

Question 1 - Degree and end behavior [2 pts]

For $f(x) = -5x^3 + x^2 - 7$, state the degree, the leading coefficient and the end behavior.

Question 2 - Zeros and multiplicity [2 pts]



Graph of f .

For $f(x) = (x+2)^2(x-5)$, list each zero with its multiplicity and tell whether the graph crosses or touches the x -axis there.

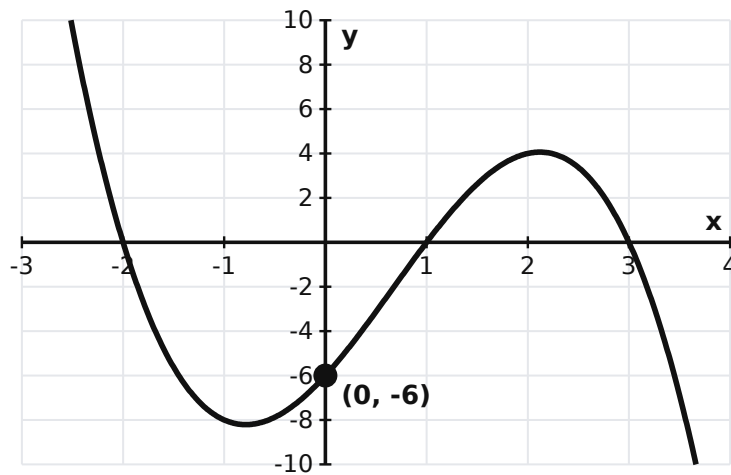
Question 3 - Factor and solve [2 pts]

Find all zeros of $f(x) = x^3 - 4x^2 - 9x + 36$.

Question 4 - Write a polynomial [2 pts]

Write a polynomial with leading coefficient 1 and zeros -2 , 1 and 3 in standard form.

Question 5 - Read a graph [3 pts]



Graph of a cubic.

- (a) State the zeros. (b) State the least possible degree and the sign of the leading coefficient.
(c) Write the equation.

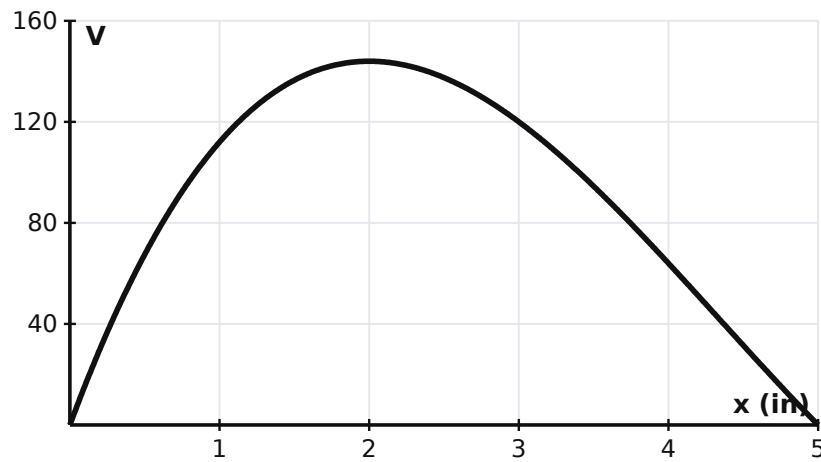
Question 6 - Polynomial inequality [2 pts]

Solve $(x+1)(x-3)(x-5) \leq 0$.

Question 7 - Intermediate Value Theorem [2 pts]

Show that $f(x) = x^3 + 2x - 5$ has a real zero between 1 and 2.

Question 8 - Box volume [3 pts]



Volume of an open box.

Ethan cuts squares of side x inches from a 10-by-16-inch sheet. The volume is $V(x) = x(10-2x)(16-2x)$. (a) Find $V(1)$ and $V(2)$. (b) State the domain. (c) Find $V(3)$ and tell which of $x=1,2,3$ gives the greatest volume.

Question 9 - Multiplicity and degree [2 pts]

For $f(x) = x^2(x-3)^3(x+1)$, state the degree and the behavior of the graph at each zero.