

Precalculus - Polynomial Division and the Factor Theorem - Test

Common Core A-APR.B.2, A-APR.D.6, A-APR.B.3 · maths-pdf.fr/en/

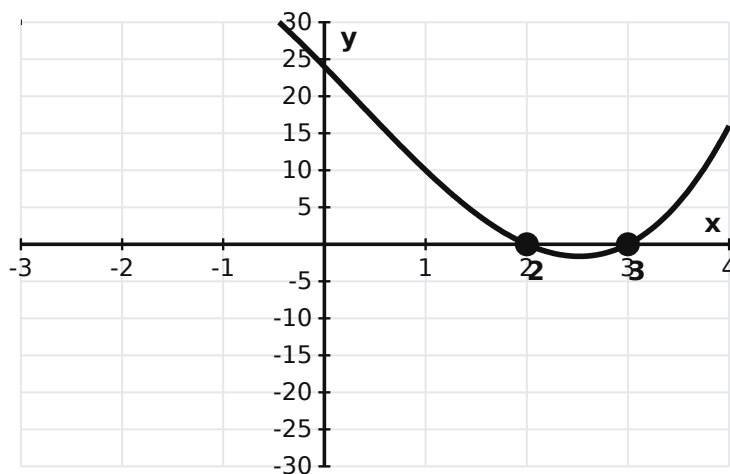
Name: _____ Class: _____ Date: ____/____/____

This 20-point test covers long and synthetic division, the Remainder and Factor Theorems, rational zeros and a box model (A-APR.B.2, A-APR.B.3). You have 45 minutes. Show your work.

About this test

- Grade: Precalculus
- Chapter: Polynomial Division and the Factor Theorem
- Standards: A-APR.B.2, A-APR.D.6, A-APR.B.3
- Time: 45 minutes
- Total: 20 points

Question 1 - Divide and factor [2 pts]



Graph of the polynomial.

Divide $x^3 - x^2 - 14x + 24$ by $x - 2$ and factor the quotient.

Question 2 - Synthetic division with a remainder [2 pts]

Divide x^4+2x^3-x+4 by $x+1$. Write the result as quotient plus remainder over divisor.

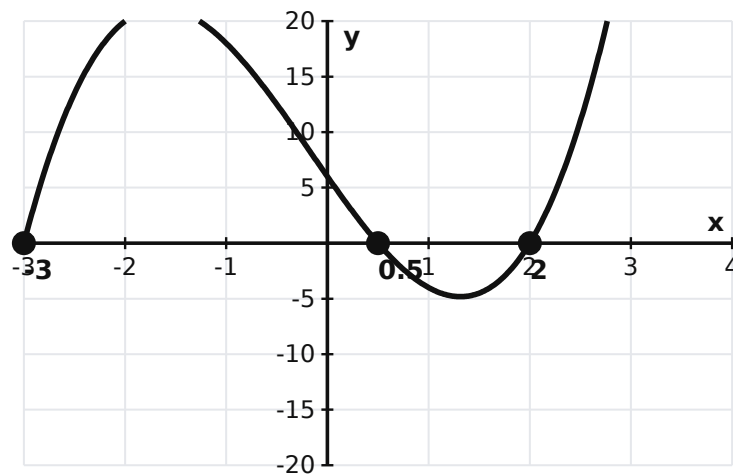
Question 3 - Remainder Theorem [2 pts]

Find the remainder when $f(x)=2x^3-5x^2+x-7$ is divided by $x-3$, using the Remainder Theorem.

Question 4 - Factor Theorem [2 pts]

Find k so that $x+1$ is a factor of x^3+kx^2-2x+8 .

Question 5 - Find all zeros [3 pts]



Graph of f .

Let $f(x)=2x^3+x^2-13x+6$. (a) List the possible rational zeros. (b) Show that 2 is a zero. (c) Find all zeros.

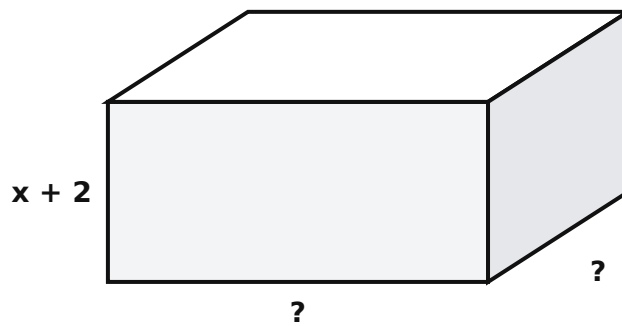
Question 6 - Division with a remainder expression [2 pts]

Write $4x^2-3x+1$ as $(x-2)q(x)+r$.

Question 7 - Biquadratic zeros [2 pts]

Find all real zeros of x^4-13x^2+36 .

Question 8 - Dimensions of a box [3 pts]



Box with volume V .

Maya's box has volume $V(x) = x^3 + 12x^2 + 44x + 48$ cubic inches and height $x + 2$ inches. (a) Divide V by $x + 2$. (b) Factor the quotient to find the other dimensions. (c) Find the volume when $x = 3$.

Question 9 - Build a polynomial [2 pts]

Write a polynomial with integer coefficients, leading coefficient 2, and zeros $-\frac{1}{2}$, 1 and 4.