Watch. Practice. Understand. | Lesson 179

Pre-Cal Chapter 3 Sample Test Questions

Watch the matching video: https://www.youtube.com/watch?v=pseyqLGicqI

Practice focus: Polynomial zeros and division

Related course review; confirm topics with your teacher.

Name: _____ Date: _____ Show your reasoning and check units.

01 Find all zeros of $x^3 - 2x^2 + 4x - 8$.

02 Divide $x^3 - 6x^2 + 11x - 6$ by $x - 1$.

03 Find the remainder when $2x^3 - x + 5$ is divided by $x - 2$.

04 A real-coefficient polynomial has zeros 1 and 2i. Find a monic cubic with these zeros.

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Practice focus: Rational expressions and graphs

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Name: _____ Date: _____ Show your reasoning and check units.

05 Simplify $(x^2 - 9)/(x^2 - x - 6)$, retaining restrictions.

06 Find asymptotes of $f(x) = (2x + 1)/(x - 3)$.

07 Find the hole in $f(x) = (x^2 - 4)/(x - 2)$.

08 Solve $1/x + 1/(x + 1) = 3/2$.

Worked answers | Lesson 179

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01 Find all zeros of $x^3 - 2x^2 + 4x - 8$.

Group: $(x - 2)(x^2 + 4)$. Zeros: 2, 2i, -2i.

02 Divide $x^3 - 6x^2 + 11x - 6$ by $x - 1$.

Synthetic division gives $x^2 - 5x + 6$ with remainder 0.

03 Find the remainder when $2x^3 - x + 5$ is divided by $x - 2$.

Remainder theorem: $f(2) = 16 - 2 + 5 = 19$.

04 A real-coefficient polynomial has zeros 1 and 2i. Find a monic cubic with these zeros.

-2i must also be a zero. $(x - 1)(x^2 + 4) = x^3 - x^2 + 4x - 4$.

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05 Simplify $(x^2 - 9)/(x^2 - x - 6)$, retaining restrictions.

Factor and cancel x - 3: $(x + 3)/(x + 2)$, with $x \neq 3$ and $x \neq -2$.

06 Find asymptotes of $f(x) = (2x + 1)/(x - 3)$.

Denominator zero gives vertical asymptote $x = 3$. Equal degrees give horizontal asymptote $y = 2$.

07 Find the hole in $f(x) = (x^2 - 4)/(x - 2)$.

For $x \neq 2$, $f(x) = x + 2$. Missing point: (2, 4).

08 Solve $1/x + 1/(x + 1) = 3/2$.

Exclude 0, -1. Multiply by $2x(x + 1)$: $2(2x + 1) = 3x(x + 1)$. Roots: $x = 1$ or $-2/3$; both check.