

The Secret Technique in Pre-Calculus Graphing Rational Functions

Lesson 178 | Precalculus | Rational expressions and graphs

<https://www.youtube.com/watch?v=L2iiCh4IT1Y>

Original practice aligned to the saved video title.

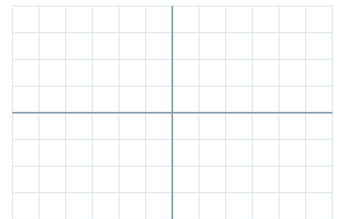
Name: _____ Date: _____ Show your reasoning.

01

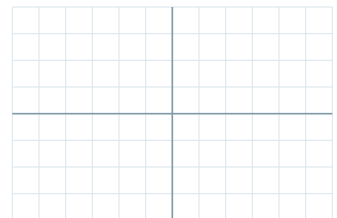
Simplify $(x^2 - 2x - 15)/(x - 5)$ and identify the excluded input and hole.

02

Analyze and sketch $f(x) = 14/(x - -9) + 2$. Give domain, asymptotes, intercepts, and two points.

**03**

Analyze and sketch $f(x) = 14/(x - -8) + 11$. Give domain, asymptotes, intercepts, and two points.



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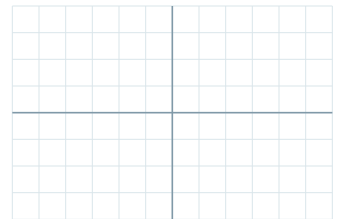
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04

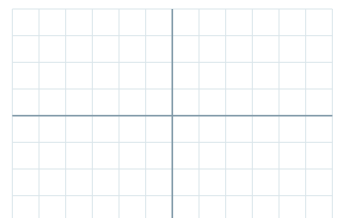
Simplify $(x^2 - 6x - 16)/(x - 8)$ and identify the excluded input and hole.

05

Analyze and sketch $f(x) = 12/(x - 9) + 6$. Give domain, asymptotes, intercepts, and two points.

**06**

Analyze and sketch $f(x) = 10/(x - 2) + 5$. Give domain, asymptotes, intercepts, and two points.



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01

Simplify $(x^2 - 2x - 15)/(x - 5)$ and identify the excluded input and hole.

Factor the numerator as $(x-5)(x+3)$. Cancel for $x \neq 5$; simplified rule $x+3$. The original domain excludes 5; the hole is (5, 8).

02

Analyze and sketch $f(x) = 14/(x - 9) + 2$. Give domain, asymptotes, intercepts, and two points.

Domain $x \neq 9$; vertical asymptote $x=9$; horizontal asymptote $y=2$. Zero: $x = -16$. y-intercept $32/9$. Points $(-8, 16)$ and $(-10, -12)$.

03

Analyze and sketch $f(x) = 14/(x - 8) + 11$. Give domain, asymptotes, intercepts, and two points.

Domain $x \neq 8$; vertical asymptote $x=8$; horizontal asymptote $y=11$. Zero: $x = -102/11$. y-intercept $51/4$. Points $(-7, 25)$ and $(-9, -3)$.

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04

Simplify $(x^2 - 6x - 16)/(x - 8)$ and identify the excluded input and hole.

Factor the numerator as $(x-8)(x+2)$. Cancel for $x \neq 8$; simplified rule $x+2$. The original domain excludes 8; the hole is $(8, 10)$.

05

Analyze and sketch $f(x) = 12/(x - -9) + 6$. Give domain, asymptotes, intercepts, and two points.

Domain $x \neq -9$; vertical asymptote $x=-9$; horizontal asymptote $y=6$. Zero: $x = -11$. y-intercept $22/3$. Points $(-8, 18)$ and $(-10, -6)$.

06

Analyze and sketch $f(x) = 10/(x - 2) + 5$. Give domain, asymptotes, intercepts, and two points.

Domain $x \neq 2$; vertical asymptote $x=2$; horizontal asymptote $y=5$. Zero: $x = 0$. y-intercept 0. Points $(3, 15)$ and $(1, -5)$.