

The Secret of Graphing Rational Functions (Pre-Cal Chapter 3 Part III)

Lesson 208 | Precalculus | Rational expressions and graphs

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

Original practice aligned to the saved video title.

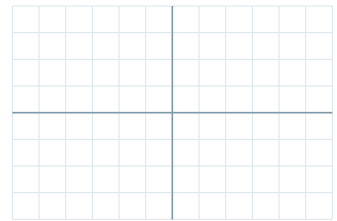
Name: _____ Date: _____ Show your reasoning.

01

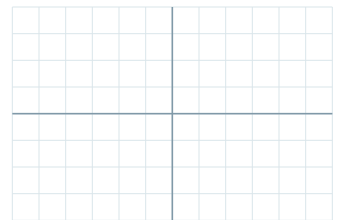
Simplify $(x^2 - 10x - 39)/(x - 13)$ and identify the excluded input and hole.

02

Analyze and sketch $f(x) = 2/(x - 7) + 6$. Give domain, asymptotes, intercepts, and two points.

**03**

Analyze and sketch $f(x) = 4/(x - 2) + 13$. Give domain, asymptotes, intercepts, and two points.



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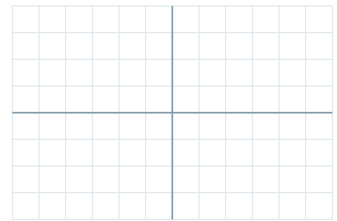
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04

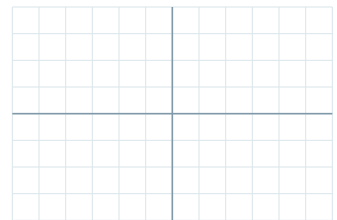
Simplify $(x^2 - 9x - 36)/(x - 12)$ and identify the excluded input and hole.

05

Analyze and sketch $f(x) = 4/(x - 1) + 11$. Give domain, asymptotes, intercepts, and two points.

**06**

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



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01

Simplify $(x^2 - 10x - 39)/(x - 13)$ and identify the excluded input and hole.

Factor the numerator as $(x-13)(x+3)$. Cancel for $x \neq 13$; simplified rule $x+3$. The original domain excludes 13; the hole is (13, 16).

02

Analyze and sketch $f(x) = 2/(x - 7) + 6$. Give domain, asymptotes, intercepts, and two points.

Domain $x \neq 7$; vertical asymptote $x=7$; horizontal asymptote $y=6$. Zero: $x = 20/3$. y-intercept $40/7$. Points (8, 8) and (6, 4).

03

Analyze and sketch $f(x) = 4/(x - -2) + 13$. Give domain, asymptotes, intercepts, and two points.

Domain $x \neq -2$; vertical asymptote $x=-2$; horizontal asymptote $y=13$. Zero: $x = -30/13$. y-intercept 15. Points (-1, 17) and (-3, 9).

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04

Simplify $(x^2 - 9x - 36)/(x - 12)$ and identify the excluded input and hole.

Factor the numerator as $(x-12)(x+3)$. Cancel for $x \neq 12$; simplified rule $x+3$. The original domain excludes 12; the hole is (12, 15).

05

Analyze and sketch $f(x) = 4/(x - -1) + 11$. Give domain, asymptotes, intercepts, and two points.

Domain $x \neq -1$; vertical asymptote $x=-1$; horizontal asymptote $y=11$. Zero: $x = -15/11$. y-intercept 15. Points (0, 15) and (-2, 7).

06

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

Domain $x \neq 9$; vertical asymptote $x=9$; horizontal asymptote $y=6$. Zero: $x = 15/2$. y-intercept 5. Points (10, 15) and (8, -3).