

Graphing a Rational Function with five easy steps

Lesson 107 | Algebra II | Rational expressions and graphs

<https://www.youtube.com/watch?v=nbkMMb4Q17k>

Original practice aligned to the saved video title.

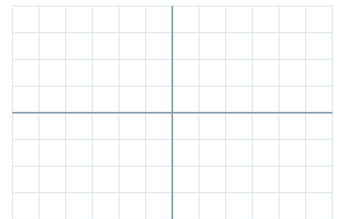
Name: _____ Date: _____ Show your reasoning.

01

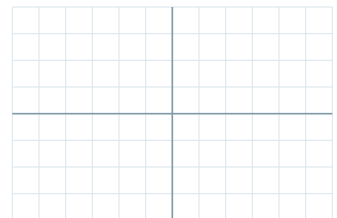
Simplify $(x^2 - 2x - 63)/(x - 9)$ and identify the excluded input and hole.

02

Analyze and sketch $f(x) = 11/(x - 0) + 8$. Give domain, asymptotes, intercepts, and two points.

**03**

Analyze and sketch $f(x) = 3/(x - -9) + 5$. Give domain, asymptotes, intercepts, and two points.



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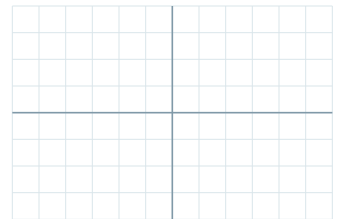
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04

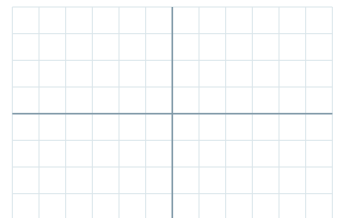
Simplify $(x^2 - x - 110)/(x - 11)$ and identify the excluded input and hole.

05

Analyze and sketch $f(x) = 4/(x - 8) + 12$. Give domain, asymptotes, intercepts, and two points.

**06**

Analyze and sketch $f(x) = 10/(x - 7) + 4$. Give domain, asymptotes, intercepts, and two points.



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01

Simplify $(x^2 - 2x - 63)/(x - 9)$ and identify the excluded input and hole.

Factor the numerator as $(x-9)(x+7)$. Cancel for $x \neq 9$; simplified rule $x+7$. The original domain excludes 9; the hole is (9, 16).

02

Analyze and sketch $f(x) = 11/(x - 0) + 8$. Give domain, asymptotes, intercepts, and two points.

Domain $x \neq 0$; vertical asymptote $x=0$; horizontal asymptote $y=8$. Zero: $x = -11/8$. No y-intercept because $x=0$ is excluded. Points (1, 19) and (-1, -3).

03

Analyze and sketch $f(x) = 3/(x - -9) + 5$. Give domain, asymptotes, intercepts, and two points.

Domain $x \neq -9$; vertical asymptote $x=-9$; horizontal asymptote $y=5$. Zero: $x = -48/5$. y-intercept $16/3$. Points (-8, 8) and (-10, 2).

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04

Simplify $(x^2 - x - 110)/(x - 11)$ and identify the excluded input and hole.

Factor the numerator as $(x-11)(x+10)$. Cancel for $x \neq 11$; simplified rule $x+10$. The original domain excludes 11; the hole is (11, 21).

05

Analyze and sketch $f(x) = 4/(x - -8) + 12$. Give domain, asymptotes, intercepts, and two points.

Domain $x \neq -8$; vertical asymptote $x=-8$; horizontal asymptote $y=12$. Zero: $x = -25/3$. y-intercept $25/2$. Points $(-7, 16)$ and $(-9, 8)$.

06

Analyze and sketch $f(x) = 10/(x - -7) + 4$. Give domain, asymptotes, intercepts, and two points.

Domain $x \neq -7$; vertical asymptote $x=-7$; horizontal asymptote $y=4$. Zero: $x = -19/2$. y-intercept $38/7$. Points $(-6, 14)$ and $(-8, -6)$.