

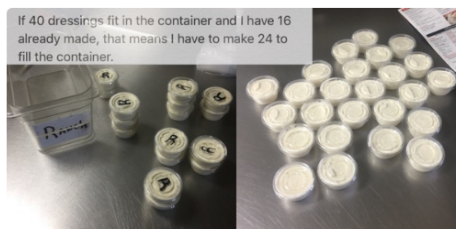
Happy Tuesday, September 27!

Do Now:

1) How do you find the y-intercept of a graph without the graph? Example: Find the y-intercept of:

$$f(x) = \frac{4x^2 + 3}{6}$$

yint : (0, 0.5)



Sep 21-8:30 PM

Quick Announcements

Sub Tomorrow (Thank you for your behavior last time!)

Quiz on Friday

Feedback

Positive

Good explanations

Walking around

Available to help

Excited about math

Constructive

Talk slower

More Examples

More Practice

More dog pictures

Positive



Constructive



Sep 27-7:32 AM

My Feedback for You

Hours 3-4

Positive

Work together well

Correct my mistakes

Ask questions when
confused

Constructive

Don't Give Up!

Make more mistakes

Include everyone

Stop worrying so
much - you are

LEARNERS

Sep 27-8:20 AM

Today's Learning Target: U2LT7

I am learning to graph rational functions.

Identifying intercepts, holes, and asymptotes by
looking at the equation.

Sep 21-8:33 PM

CER

Claim: I think that functions have holes when...

Evidence: You can see this in graphs...

Reasoning: This is happening because...

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X-intercepts

C: Set $y = 0$ and solve.

E:

R: If $y=0$, that is the x-axis

Y-intercepts

C: Set $x = 0$ and solve.

E:

R: If $x=0$, that is the y-axis

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Holes (Removable Discontinuities)

C: If a factor on top matches a factor on bottom, there will be a hole at that zero.

E: $f(x) = \frac{x^2 - 36}{x + 6} = \frac{(x+6)(x-6)}{x+6}$ $x = -6$

R: Everywhere else, the graph looks like the rest of that function, but at that point, the graph "cancels" out.

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VA: Vertical Asymptotes

C: After looking for holes \rightarrow anything else that makes the denom. zero \Rightarrow vertical asy.

E: $f(x) = \frac{1}{6-x}$ VA: $x = 6$

R: Domain restrictions

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Horizontal Asymptotes

- ① Degree of denom. is higher than the degree of the numerator then HA $y=0$.

HA: $y=0$ $f(x) = \frac{x^3 - x^2 + 6}{2x^4 + 7 - 6}$

- ② If the degrees of the num. & denom are the same \rightarrow then look at the coeff. of the highest deg.

$f(x) = \frac{3x^3 + 6x - 1}{4x^3 - 5}$ HA: $y = \frac{3}{4}$

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Slant Asymptotes

If the degree of the num is greater than the denom, then Slant asympt.

$f(x) = \frac{x^2 + 5}{x}$

Mult. by x
SA: $y = x$

$f(x) = \frac{6x^2 + 5}{3x}$

SA: $2x = y$

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Let's Graph!

$f(x) = \frac{(x-1)(x-4)}{(x-\frac{1}{2})(x+2)(x-2)}$

$\frac{-2}{10} = -\frac{1}{5}$

Hole(s): $x=1$

Set $y=0$ X-Intercept(s): $(4, 0)$

Set $x=0$ Y-Intercept: $(0, 1)$

Vertical Asymptote: $x=2, -2$

Horizontal Asymptote: $y=0$

Slant Asymptote: _____

Domain: $(-\infty, -2) \cup (-2, 1) \cup (1, 2) \cup (2, \infty)$

Range: _____

degree \leftarrow

$\frac{-4}{2(-2)} = 1$

x	y
-5	-3/5
-1	-1/5
3	-1/5

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$f(x) = \frac{-x(x+1)}{(x+2)(x-2)}$

Hole(s): None

Set $y=0$ X-Intercept(s): $(0, 0), (-1, 0)$

Set $x=0$ Y-Intercept: $(0, 0)$

Vertical Asymptote: $x=-2, x=2$

Horizontal Asymptote: $y=-1$

Slant Asymptote: None

Domain: _____

Range: _____

Deg \rightarrow
match \leftarrow

Test Points in each region:

x	y
-3	-6/5
-4	+1
-5	+20/21
1	2/3
3	-12/5

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Homework: Graphing Rational Functions worksheet.
For extra asymptote practice, start with asymptote worksheet.

Exit Slip: How do you find horizontal asymptotes?

(Don't forget to rate yourself!)

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