

We'll be tight for time today

- We'll check yesterday's HW on Monday
- For now, do #1, #2, and #3 only on the Warm Up. 🍓

The next test is

Wed. Feb. 19th

$$\textcircled{1} \quad \frac{1}{5} \cdot \frac{700}{62} = \frac{7}{10}$$

ator

$$\textcircled{2} \quad \frac{3}{5} \div \frac{27}{20} = \frac{1}{5} \cdot \frac{20}{9} = \frac{4}{9}$$

$$\textcircled{3} \quad \frac{3n^3}{2n} = \frac{-3n^2}{2} \quad \frac{-3}{2}n^2$$

$$\textcircled{4} \quad \frac{n^4 + n}{n} = \frac{\cancel{n}(n^3 + 1)}{\cancel{n}} = n^3 + 1$$

$$\textcircled{5} \quad \frac{4x - 10}{6x} = \frac{\cancel{2}(2x - 5)}{\cancel{3} \cdot 2x} = \frac{2x - 5}{x}$$

$$\textcircled{6} \quad \frac{w + 6}{w^2 - 36} = \frac{\cancel{w + 6}}{(\cancel{w + 6})(w - 6)} = \frac{1}{w - 6}$$

with your calculator

$$\text{divide } \frac{52}{0} =$$

Wait for instructions

simplify and state any restrictions on the variables of the function

$$f(x) = \frac{\cancel{x-2}}{\cancel{x-2}} \rightarrow \boxed{1} \quad \text{but ... } x \neq 2$$

$$g(x) = \frac{\cancel{x}}{\cancel{x}} \cdot \frac{\cancel{x}}{\cancel{x}} \cdot \frac{x}{3} \rightarrow \frac{x^3}{3\cancel{x^2}} = \boxed{\frac{x}{3}} \quad x \neq 0$$

$$h(n) = \frac{n^2-16}{n+4} \rightarrow \frac{\cancel{(n+4)(n-4)}}{n+4} = \boxed{n-4} \quad n \neq -4$$

$$n+4=0 \\ n=-4$$

$$k(n) = \frac{n+2}{n-7} \cdot \frac{n+5}{\cancel{n+2}} \rightarrow \boxed{\frac{n+5}{n-7}} \quad \begin{array}{l} n \neq 7 \\ n \neq -2 \end{array}$$

$$m(x) = \frac{9}{x} \cdot \frac{x}{9} \rightarrow \boxed{1} \quad x \neq 0$$

$$f(m) = \frac{2m+6}{(m+3)(m-11)} \rightarrow \frac{2\cancel{(m+3)}}{1\cancel{(m+3)}(m-11)} = \boxed{\frac{2}{m-11}} \quad \begin{array}{l} m \neq 11 \\ m \neq -3 \end{array}$$

$$g(x) = \frac{12(x+1)}{8(x+1)^2} \rightarrow \frac{3 \cancel{4}}{2 \cdot 8(x+1)} = \frac{3}{2(x+1)}$$

$$h(x) = \frac{\cancel{5-2x}}{(4x-1)\cancel{(5-2x)}} \rightarrow \frac{\cancel{1}}{4x-1}$$



$$(4x-1)(3-2x) = 0$$

$$\begin{array}{l} \swarrow \quad \searrow \\ 4x-1=0 \quad 3-2x=0 \\ \quad \quad \quad 3=2x \end{array}$$

$$\boxed{\frac{1}{4x-1}}$$

$$x \neq \frac{1}{4}$$

$$x \neq \frac{3}{2}$$

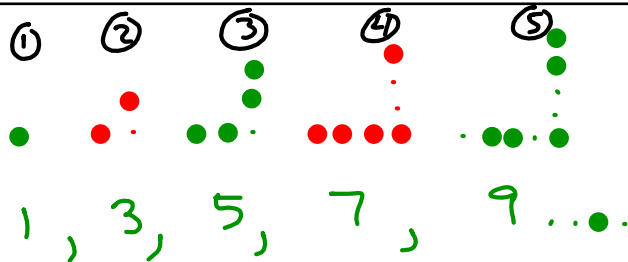
HW
Questions

$$\underline{\underline{67f}} \quad (m^2)^{\frac{-3}{2}}$$

$$(a^2)^3 =$$

$$(a^n)^m =$$

63



$$t(n) = 1 + 2(n-1) \quad \leftarrow n^{\text{th}} \text{ term}$$

$$t(46) = 1 + 2(46-1) = 91 \quad \leftarrow 46^{\text{th}} \text{ term}$$

64 First piece of metal $T_1 = 20 + 2x$
 Second piece of metal $T_2 = 240 - 3x$ $x = \#$
 minutes

Equal
Values
method

$$20 + 2x = 240 - 3x$$

65 starting value \$10.25 + 3%

think $y = ab^x$

$$y = 10.25(1.03)^x$$

(a) $100\% + 3\% = 103\%$
 \downarrow
 1.03

(b) function $f(n) = 10.25(1.03)^n$

(c) $f(10) = 10.25(1.03)^{10} =$

$$\boxed{67} \quad a \quad \sqrt[5]{x}$$

$$b \quad \frac{1}{x^3}$$

$$c \quad x^{2/3}$$

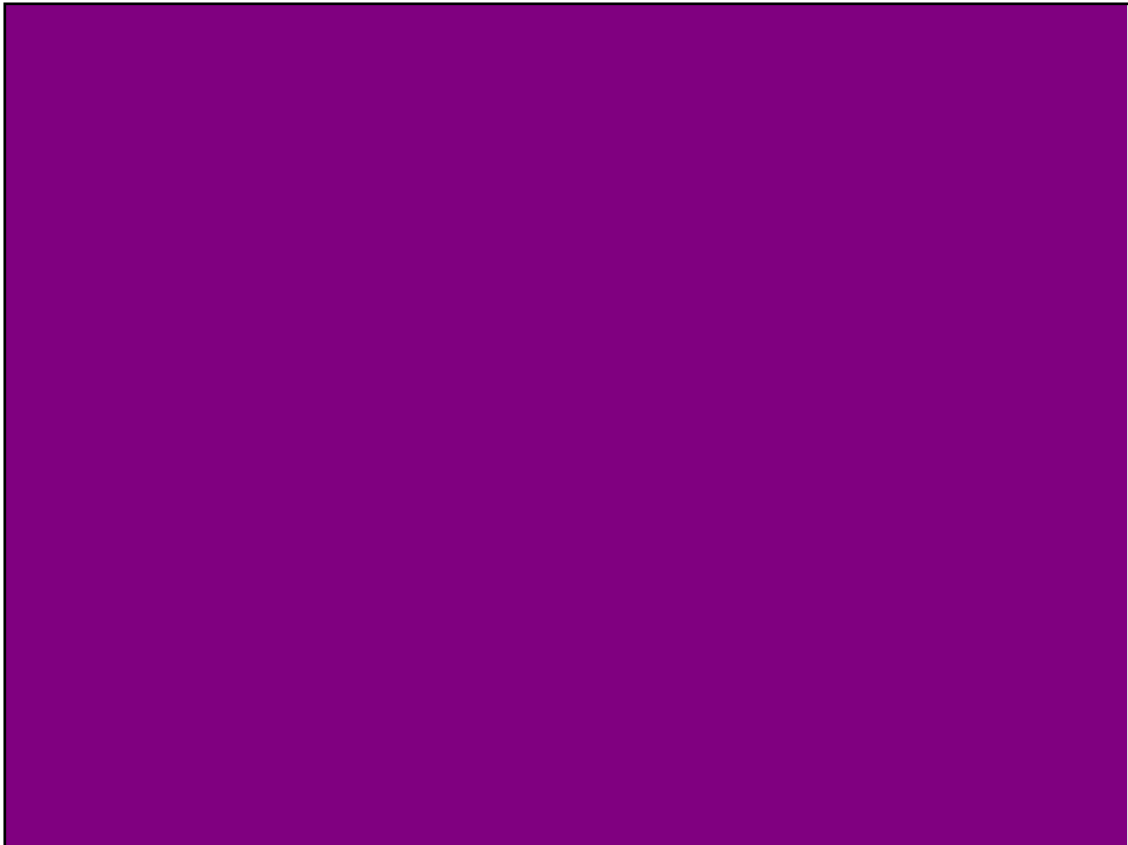
$$d \quad \frac{1}{\sqrt{x}} = \frac{1}{x^{1/2}}$$

$$e. \quad x^{-1}y^{-8}$$

$$f. \quad (m^2)^{-3/2}$$

$$g. \quad (x^3y^6)^{1/2} = \sqrt{x^3y^6}$$

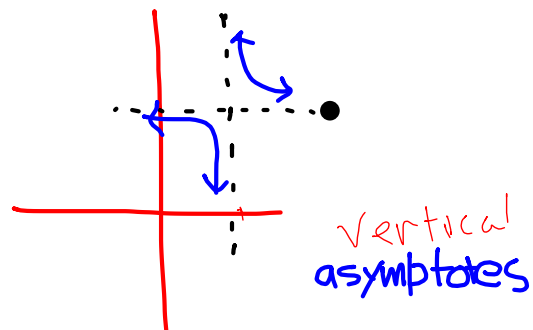
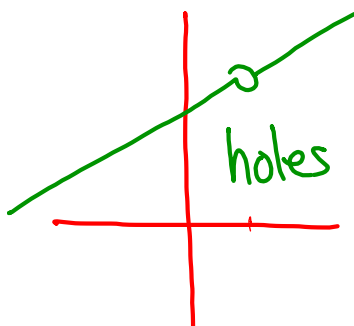
$$h. (9x^3y^6)^{-2}$$



Rational Functions

1. Analyze their graphs
2. Simplify them.
 - Easier
 - Harder

Rational functions create graphs that have
2 types of vertical discontinuities



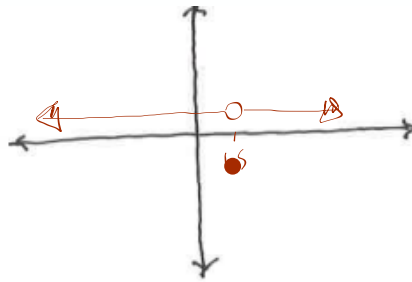
Analyzing Graphs of Rational Functions

1. Sketch each function - Use dashed lines for any asymptotes
- include any holes
2. Describe any discontinuities

$$g(x) = \frac{2x-3}{2x-3}$$

Always think
before you pick
up GDC!

there will be a vert. discant at $x=1.5$



discontinuities: hole at $x=1.5$

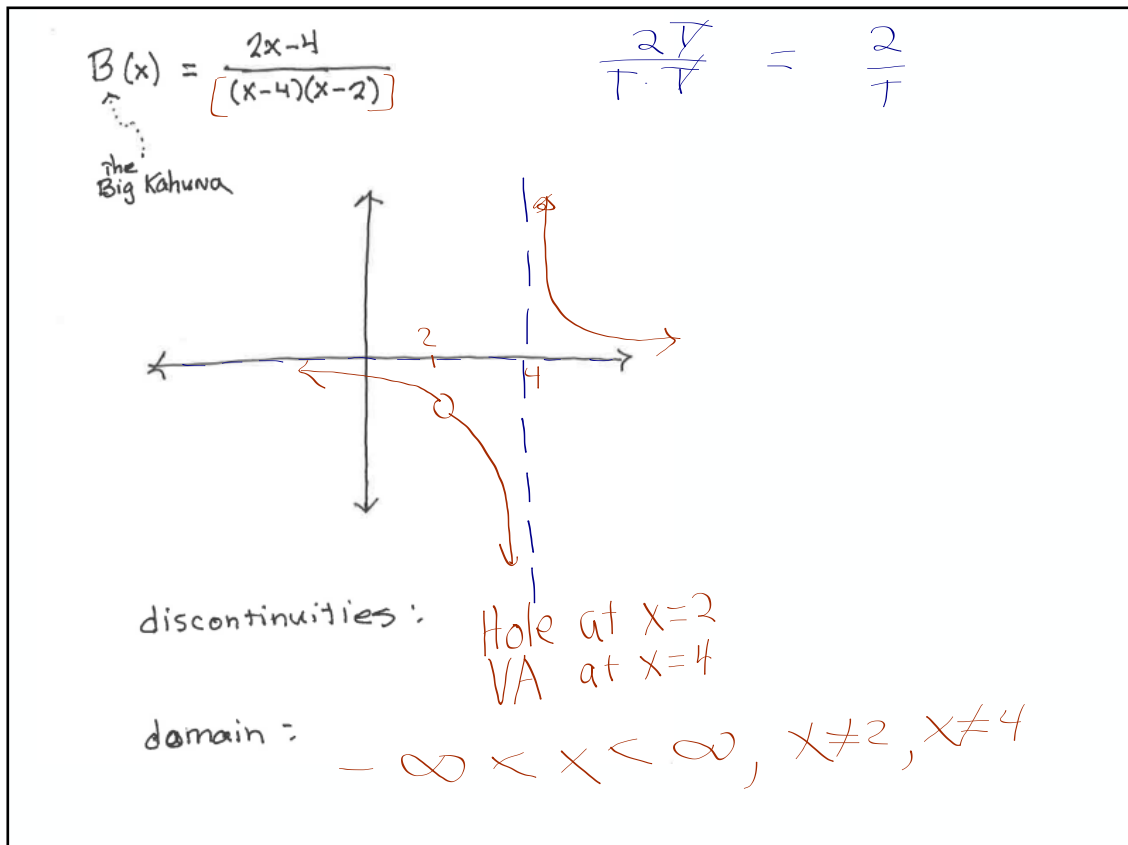
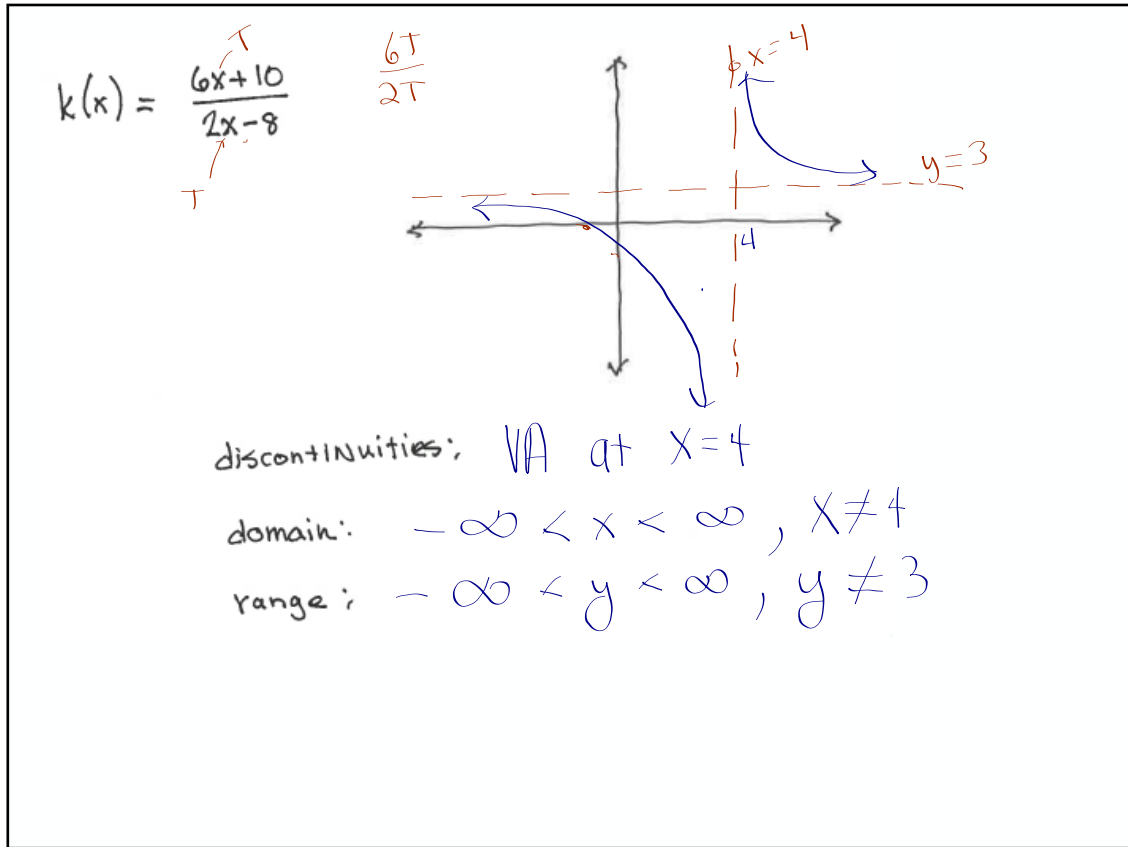
$$2x-3=0$$

$$2x=3$$

$$x=1.5$$

domain: $-\infty < x < \infty, x \neq 1.5$

range: $y=1$



NOTES examples of

Simplifying Rational expressions

- next level

ex.
A

$$\frac{x^2 + 6x + 9}{x^2 - 9}$$

ex B

$$\frac{x^2 + 4x}{2x + 8}$$

ex C

$$\frac{2x^2 - x - 10}{3x^2 + 7x + 2}$$

$$c. \frac{28x^2 - x - 15}{28x^2 - x - 15}$$

Assignment

3 - 78 to 84

😊 Keep up your hard work.

Next TEST

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