Bellwork Alg 2 hrs 1-3 Thursday, February 21, 2019

1. Find the equations for all VA and HA, if any. Find all Holes and x & y - intercepts, if any.

$$y = \frac{2x^3 + 8x^2 - 10x}{x^3 - x^2 - 9x + 9}$$

HA:

VA:

Holes:

x-int:

y-int:

2. Simplify this rational expression. State restrictions on the variables.

$$\frac{4x^3 + 4x^2 - 24x}{8x^6 - 104x^4 + 288x^2}$$

Restrictions:

3.Of all the houses in a certain neighborhood, 80% have garages. Of those with garages, 60% have two-car garages. If there are 56 houses with garages that are **not** two-car garages, how many houses are there in the neighborhood?

A. 26 B. 93 C. 117 D. 156 E. 175

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1. Find the equations for all VA and HA, if any. Find all Holes and x & y - intercepts, if any.

$y = \dfrac{2x^3 + 8x^2 - 10x}{x^3 - x^2 - 9x + 9}$

$2x(x^2 + 4x - 5) = 2x(x+5)(x-1)$

| | $x$ | $-1$ |
|---|---|---|
| $x^2$ | $x^3$ | $-x^2$ |
| $-9$ | $-9x$ | $+9$ |

$\rightarrow (x-1)(x+3)(x-3)$

$= \dfrac{2x(x+5)(x-1)}{(x-1)(x+3)(x-3)}$

HA: $y = 2$

VA: $x = \pm 3$

Holes: $x = 1$

x-int: $x = 0, -5$

y-int: $y = \frac{0}{9} = 0$

2. Simplify this rational expression. State restrictions on the variables.

$\dfrac{4x^3 + 4x^2 - 24x}{8x^6 - 104x^4 + 288x^2}$

Restrictions: $x \neq 0, \pm 2, \pm 3$

$8x^2(x^4 - 13x^2 + 36)$

| | $x^2$ | $-9$ |
|---|---|---|
| $x^2$ | $x^4$ | $-9x^2$ |
| $-4$ | $-4x^2$ | $+36$ |

$+36$, $-9$, $-4$, $-13$

$= 8x^2(x^2-4)(x^2-9)$

$= 8x^2(x+2)(x-2)(x+3)(x-3)$

$4x(x^2 + x - 6) = 4x(x+3)(x-2)$

$-6$, $+3$, $-2$, $+1$

$\dfrac{4x(x+3)(x-2)}{8x^2(x+2)(x-2)(x+3)(x-3)}$

$= \dfrac{1}{2x(x+2)(x-3)}$

3. Of all the houses in a certain neighborhood, 80% have garages. Of those with garages, 60% have two-car garages. If there are 56 houses with garages that are **not** two-car garages, how many houses are there in the neighborhood?

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* OF HOUSES WITH GARAGES: 40% DO NOT HAVE 2-car-garage: 56 is 40% of what?

$56 = .40x \quad x = 140$

* 140 houses have garages

* OF all houses, 80% have garages: 140 is 80% of what

$140 = .80x$

$x = 175$