

Algebra II Test #4.2

Name Key Date _____ Period _____

State the domain, holes, vertical asymptote(s), horizontal asymptote, y-intercept, x-intercept(s) and then sketch a graph.

1-7) $g(x) = \frac{3x^2 + 5x - 2}{x^2 - 4x - 12}$ $\frac{(3x-1)(x+2)}{(x+2)(x-6)}$

D: all \mathbb{R} except $x = -2, 6$

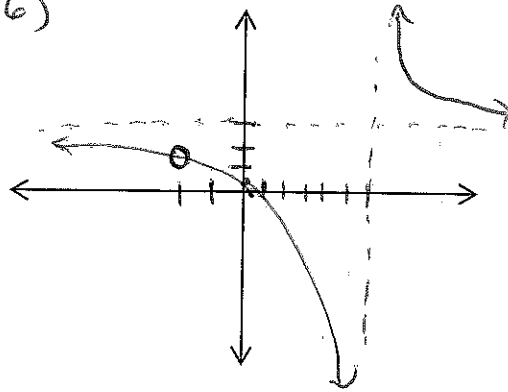
Hole: $(-2, 7/8)$

VA: $x = 6$

HA: $y = 3$

y-int: $(0, 1/6)$

x-int: ~~$(2, 0)$~~
 $(1/3, 0)$



8-13) $h(x) = \frac{2x^2}{7x(x-1)} = \frac{2x}{7(x-1)}$

D: all \mathbb{R} except $x = 0, 1$

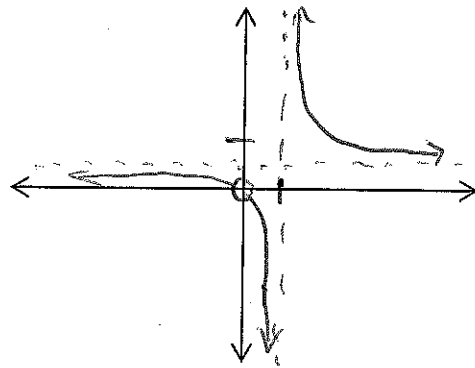
Hole: $(0, 0)$

VA: $x = 1$

HA: $y = 2/7$

y-int: none

x-int: none



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Work must be shown for full credit. BOX your answer. Work = 1/2 credit. Correct answer = 1/2 credit. NO other credit on these problems. Round answers to 2 decimal places.

14) Bill can paint a closet in 4 hours. Bob can paint the same closet in 1.5 hours. How long will it take them to paint the closet working together?

$$\frac{1}{4} + \frac{1}{1.5} = \frac{1}{t}$$

$$\frac{11}{12} = \frac{1}{t}$$

$t = \frac{12}{11} \text{ hrs}$

1 hr 5.45 min
1.09 hrs

15) It takes Zach 20 minutes to do the dishes. If his brother Mike helps, it only takes 9 minutes. How long would it take Mike to do the dishes alone?

$$\frac{1}{20} + \frac{1}{x} = \frac{1}{9}$$

$$\frac{1}{x} = \frac{11}{180}$$

$x = \frac{180}{11} \text{ minutes}$

$\approx 16.36 \text{ minutes}$

16) An elevator went from the bottom to the top of a tower at an average speed of 4.5 m/s, remained at the top for 85 seconds, and then returned to the bottom at 5 m/s. If the total elapsed time was 6 minutes, how high was the tower?

$$\frac{d}{4.5} + 85 + \frac{d}{5} = 360$$

$$\frac{d}{4.5} + \frac{d}{5} = 275$$

$\frac{9.5d}{22.5} = 275$
 ~~$\approx 34.28 \text{ m}$~~

$d = \frac{12375 \text{ m}}{19} \approx 651.316 \text{ m}$

17) A tub contains 350 liters of a 34% salt solution. How much water must be added to reduce it to a 21% salt solution?

$$350(.34) = 119 \text{ salt}$$

$$\frac{119}{350+x} = .21$$

$$119 = 73.5 + .21x$$

$$45.5 = .21x$$

$x = 216.7 \text{ L}$