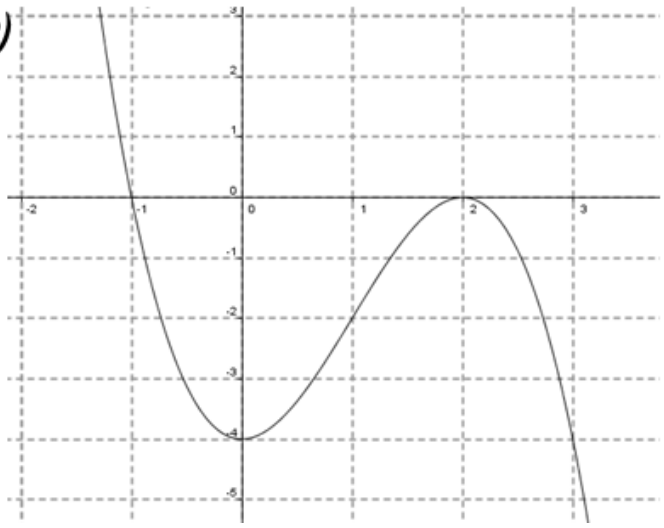
Review

February 9, 2014 5:39 AM

MHF used 2011-1 + other

1. Sketch the reciprocals of the following

a)



b) $y = 2x^2 + x + 1$

2. Sketch + label intercepts + asymptotes

a) $f(x) = \dfrac{x^2 - 9}{5x^2 + 4x - 33}$

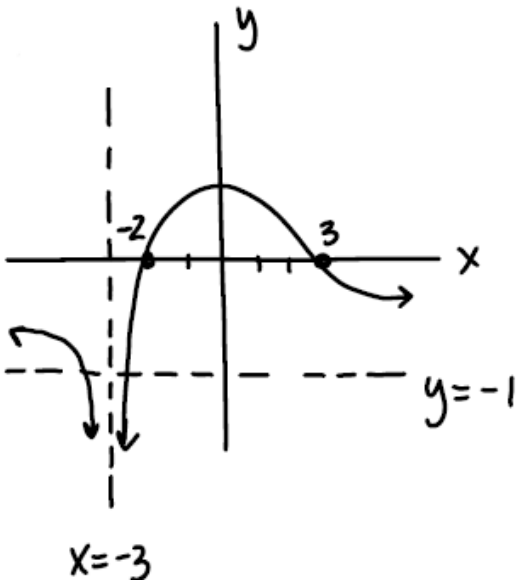
b) $f(x) = \dfrac{-2}{3x + 6} + 4$

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

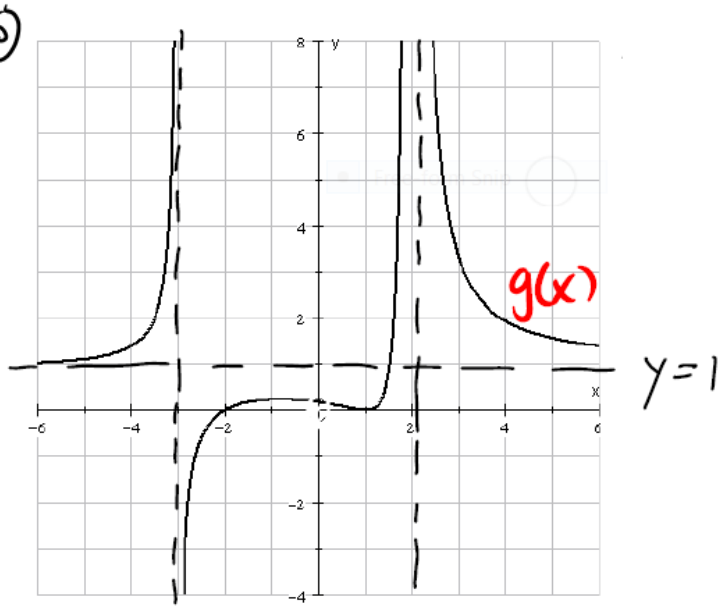
d) $s(x) = \dfrac{4}{(x-2)^2}$

(3.) Find the equation for the following

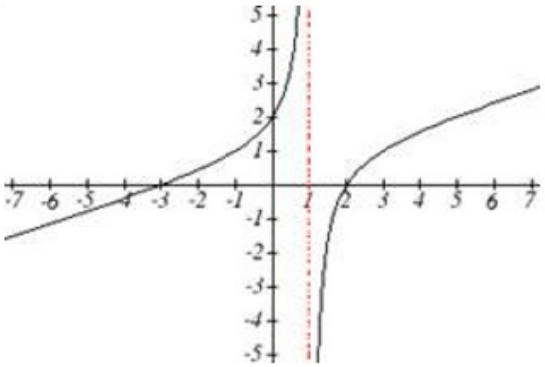
(a)



(b)



(c)



(d) Vertical asymptotes at $x = -3$ and $x = 6$

x intercepts at $(-2,0)$ and $(1,0)$ Horizontal asymptote at $y = -2$

(4) Solve

(a) $\frac{1}{r-2} + \frac{1}{r^2 - 7r + 10} = \frac{6}{r-2}$

(b) $\frac{-t}{4t-1} \geq \frac{2}{t-9}$

(c) $\frac{1}{x+2} + \frac{24}{x+3} = 13$

(d) $\frac{2}{x+5} > \frac{3x}{x+10}$

(5) When they work together, Stuart and Lucy can deliver flyers to all the homes in their neighbourhood in 42 min. When Lucy works alone, she can finish the deliveries in 13 min less time than Stuart can when he works alone. Find Stuart's + Lucy's time alone

(6.) Rima bought a case of concert T-shirts for $450. She kept two T-shirts for herself and sold the rest for $560, making a profit of $10 on each T-shirt. How many T-shirts were in the case?

(7.) A passenger jet flew from Dallas, Texas to Germany and back. The return flight took 4 hours less than it took to go to Germany. The difference in flight time was caused by winds over the ocean which averaged 50 km/h only on the return trip. Assume there was no wind factor on the trip to Germany. The round trip(there and back) is 9900 km.

a) What was the average speed of the plane in still air?

b) How long did the round trip take?

(8.) It takes Frank 2 hours longer than Jane to carpet a certain type of room. Together they can carpet that type of room in $1\frac{7}{8}$ hours. How long would it take for Frank to do the job alone?

9. A company purchases x kilograms of steel for \$2249.52. The company processes the steel and turns it into parts that can be used in other factories. After this process, the total mass of the steel has dropped by 25 kg (due to trimmings, scrap, and so on), but the value of the steel has increased to \$10 838.52. The company has made a profit of \$2/kg. What was the original mass of the steel? What is the original cost per kilogram?

10. A chemist is studying the properties of a bronze alloy (mixture) of copper and tin. She begins with 2 kg of an alloy that is one-half tin and one-half copper . Keeping the amount of copper constant, she adds small amounts of tin to the alloy. Letting x be the total amount of tin added, define: C(x) = Concentration of tin = the quotient of the total amount of tin and the total amount of alloy.
   a) Find a formula for C(x).
   b) Evaluate C(0.5) and C(-0.5). Explain the physical significance of these quantities.
   c) Graph C(x), labeling all interesting features. (vertices, x-intercept(s), y-intercept, end behavior, vertical asymptotes)
   d) Describe the physical significance of the features you have identified in part c).

AP

1. Sketch the following

a) $f(x)=\dfrac{x^3-8}{(x+1)^2}$

b) $f(x)=\dfrac{1+x^2}{2-x}$

c) $f(x)=\dfrac{2-x}{1+x^2}$

d) $f(x)=\dfrac{9x}{1+x^2}$

e) $y=\dfrac{(8-4x)^2(9-x^2)}{(6-x)^3(x-1)(-4x-16)}$

2. Solve

a) $x+3\leq 2\sqrt{x-6}+9$

b) $\left|x^2+2x+1\right|\geq 4$

(c) $\sqrt{x+3}-2=|7-x|$

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