MATH 206 April 2012 Final Exam Answers

Question 1

a) $-\sqrt{3}$
b) 1

Question 2

a) $\sqrt{7}+\sqrt{14}$
b) $\frac{\left(14+5\sqrt{3}\right)}{11}$

Question 3

a) $9x^5+x^4-5x^3+7x^2-8x$
b) $\frac{x}{12}, x \neq -2$

Question 4

a) $(3x+4)(x-2)$
b) $x^2(x-3)(x+3)$

Question 5

$-\frac{\left(3x^2+11x+11\right)}{x^2+7x+12}$

Question 6

a) $x=-6$
b) $x=4$
c) $x=-4, x=4$

Question 7

a) $[1,4]$ **or** $\{x \mid 1 \leq x \leq 4\}$ ***Revised on Nov* 30 *th***
b) $(-1,2)$ **or** $\{x \mid -1 < x < 2\}$

Question 8

$x=5, y=2$

Question 9

a) Point B is closer

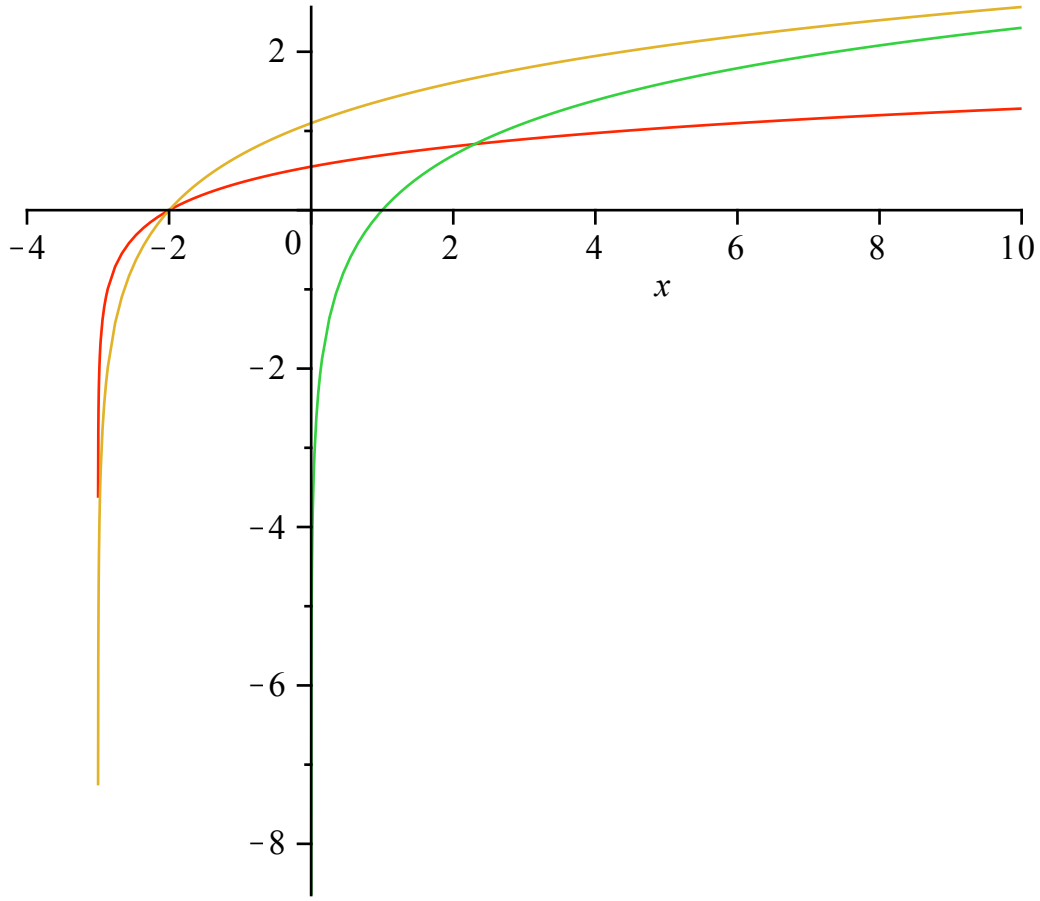
b) $\left(x-\frac{1}{2}\right)^2+(y+1)^2=\frac{1}{4}\rightarrow Center=\left(\frac{1}{2},-1\right)\ Radius=\frac{1}{2}\ units$

Question 10

a) Domain = $\{x \mid x \neq 2, x \neq -2\}$. Range = $\mathbb{R}$
b) Domain = $\{x \mid x \geq 4\}$, Range = All non-negative numbers
c) Domain = $\mathbb{R}$, Range = $[-4, \infty]$

Question 11

$plot\left(\left\{\ln(x), \ln(x+3), \frac{1}{2}\ln(x+3)\right\}\right)$



Final answer in RED

Question 12

a) $(fg)(x)=\frac{(2x-1)(x+4)}{(x-2)(2x-5)}$

b) $\left(\frac{f}{g}\right)(x)=\frac{(2x-1)(2x-5)}{(x-2)(x+4)}$

c) $(f \circ g)(x) = -\dfrac{13}{3x - 14}$

d) $(g \circ f)(x) = -\dfrac{(6x - 9)}{x + 8}$

Question 13

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

b) $f: HA \rightarrow y = 2,\ VA \rightarrow x = -2$

$f^{-1}: HA \rightarrow y = -2,\ VA \rightarrow x = 2$

Question 14

He should invest $52,500 at 8% and $17,500 at 12%

Question 15

110 Adults and 215 Seniors **Revised Dec 1st**

Question 16

a) 7.59 grams
b) 50.05 days
c) 25.02 days