

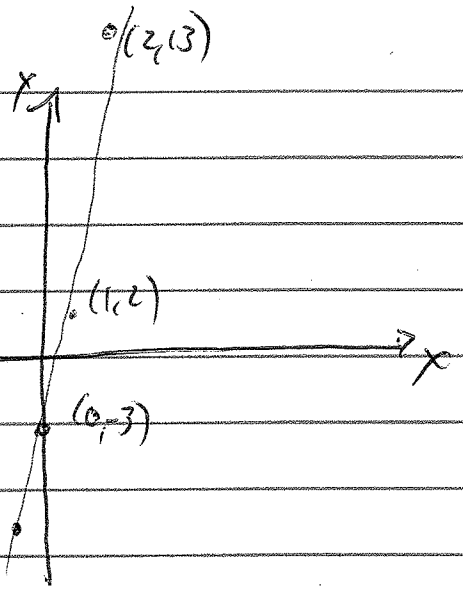
Relevant

HW problems

Exam 1a solutions

1.1 #7

①	x	-1	0	1	2
	y	-8	-3	2	13



1.2 #1-9 odd

② No, because when you try to plug in $x=2$ you get a zero in a denominator.

1.3 #23

③ $L + (0.1)L = (1.1)L$

1.7 #1-5

④ ~~$x = -5$~~

1.7 #7-11

⑤ $[-6, 2)$

1.4 #67-85

⑥ $x^2 - 4x - 7 = 0 \Rightarrow x = \frac{4 \pm \sqrt{16 - 4(-7)}}{2} = \frac{4 \pm \sqrt{44}}{2} = \frac{4 \pm 2\sqrt{11}}{2} = \boxed{2 \pm \sqrt{11}}$

1.4 #7-15

⑦ $(11x + 5)(x - 1) = 0 \Rightarrow x = -5/11, 1$

1.7 #33

⑧ $6x - 9 \leq 16x - 12 \Rightarrow 12 - 9 \leq 10x \Rightarrow 10x \geq 3 \Rightarrow x \geq 3/10$

1.6 #1

⑨ $x^2(x^2 + 1) = 0 \Rightarrow x^2 = 0$ or $x^2 = -1 \Rightarrow x = 0$

1.6 #31

⑩ $\sqrt{5-3x} = 3 \Rightarrow 5-3x = 9 \Rightarrow -3x = 4 \Rightarrow x = -4/3$ (which checks)

1.8 #29, 31

⑪ $= 0$ when $x = 3, -1, 4$

+	-	-	+
-1	3	4	x

Solution: $x \geq 4$ or $x \leq -1$.

1.6 #23

⑫ $(x^3 - 2)(x^3 - 3) = 0 \Rightarrow x^3 = 2$ or $3 \Rightarrow x = \sqrt[3]{2}$ or $\sqrt[3]{3}$

1.6 #41

⑬ $x = (\sqrt{x-5} + 1)^2 = x - 5 + 2\sqrt{x-5} + 1$
 $\Rightarrow 4 = 2\sqrt{x-5} \Rightarrow 2 = \sqrt{x-5} \Rightarrow 4 = x - 5 \Rightarrow x = 9$ (checks)

1.3 #67

⑭ 3% = x , 5% = $15000 - x$
 $(.03)x + (.05)(15000 - x) = (.045)(15000)$

1.6 #103

⑮ Fast person = x hrs
 Slow = $x + 2$ hrs

$\frac{1}{x} + \frac{1}{x+2} = \frac{1}{3}$ See HW probs for further work.

Relevant

HW probs ↓

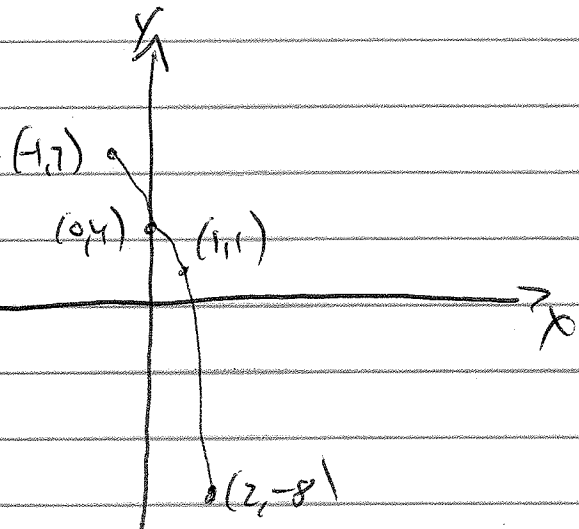
Exam 1 b solutions

1.1 #7

$$\begin{array}{c|c|c|c|c} \textcircled{1} & x & -1 & 0 & 1 & 2 \\ \hline & y & 7 & 4 & 1 & -8 \end{array}$$

1.2 #1-9 old

② No, because if you try to plug in $x=4$, you get a zero in a denominator.



1.3 #23

③ $L - (0.2)L = (0.8)L$

1.7 #1-5

④ $x \leq -7$

1.7 #7-11

⑤ $(-11, -3]$

1.4 #67-85

$$\textcircled{6} \quad x^2 - 2x - 9 = 0 \Rightarrow x = \frac{2 \pm \sqrt{4 - 4(-9)}}{2} = \frac{2 \pm \sqrt{40}}{2} = \frac{2 \pm 2\sqrt{10}}{2} = \boxed{1 \pm \sqrt{10}}$$

1.4 #7-15

⑦ $(7x + 5)(x - 1) = 0 \Rightarrow x = -5/7, 1$

1.7 #33

⑧ $5x - 6 \leq 14x - 21 \Rightarrow 21 - 6 \leq 9x \Rightarrow 15 \leq 9x \Rightarrow x \geq 15/9 \Rightarrow x \geq 5/3$

1.6 #1

⑨ $x^3(x^2 + 13) = 0 \Rightarrow x^3 = 0$ or $x^2 = -13 \Rightarrow x = 0$

1.6 #31

⑩ $\sqrt{6-3x} = 4 \Rightarrow 6-3x = 16 \Rightarrow -3x = 10 \Rightarrow x = -10/3$

1.8 #29, 31

⑪ = 0 when $x = 2, -4, 6$

Solution: $x \geq 6$ or $x \leq -4$ or $x = 0$.

1.6 #23

⑫ $(x^{1/3} \rightarrow x x^{1/3} - 1) \Rightarrow x^{1/3} = 1$ or $7 \Rightarrow x = 1$ or $7^3 = 343$

1.6 #41

⑬ $x = (\sqrt{x-5} + 1)^2 = (x-5) + 2\sqrt{x-5} + 1$
 $\Rightarrow 4 = 2\sqrt{x-5} \Rightarrow 2 = \sqrt{x-5} \Rightarrow 4 = x-5 \Rightarrow x = 9$ (checks)

1.3 #67

⑭ 4% = x 7% = $20000 - x$
 $(.04)x + (.07)(20000 - x) = (.05)(20000)$

1.6 #103

⑮ Slower person: x hrs
 Faster: $x+3$ hrs

$$\frac{1}{x} + \frac{1}{x+3} = \frac{1}{4}$$

For details on solution, see HW