Show all your work to get proper credits. Otherwise, no credit will be given. This is only the review for exam and you should review other necessary work. Exam 2 covers the sections 2.1-2.6.

1. Solve the following equations. Check your answers if possible.

(a) $8(x-2)=4x-20$ (b) $8x-2=4x-20$ (c) $\dfrac{y+10}{15}-\dfrac{1}{5}=\dfrac{y+1}{6}-\dfrac{1}{10}$

(d) $4-2(2x-1)=4x-7(1-x)$ (e) $\dfrac{3x}{4}-5=\dfrac{1}{4}$ (f) $(x-2)^2=x^2+1$ (g) $\dfrac{3}{x}-1=\dfrac{1}{2}-\dfrac{6}{x}$

(h) $\dfrac{u-3}{2u-2}=\dfrac{1}{6}-\dfrac{1-u}{3u-3}$ (i) $2(x-1)^2+1=4$ (j) $2x^2-7x=-3$ (k) $2x^2-3x-3=x+1$

(l) $x=5+\sqrt{x-3}$ (m) $2-3|3x-1|=-1$

2. Solve the equation for x.

(a) $kx+8=1-6(x-2)$ (b) $y=\dfrac{4x+5}{2x+1}$ (c) $a^2=\dfrac{a+c}{x}+c^2$

3. If you pay $42 for a game player after receiving a 30% discount, what was the price of the player before the discount?

4. A part of $8000 was borrowed at 2% simple annual interest and the remainder at 4%. If the total amount of interest after a year is$280, how much each was borrowed?

5. How many pounds of Brazilian nut worth $10 per pound must be mixed with 20 pounds of Colombian nut worth $8 per pound to produce a mixture worth $8.40 per pound?

6. One pump can fill a gas tank in 8 hours. With a second pump working simultaneously, the tank can be filled in 3 hours. How long would it take the second pump to fill the tank operating alone?

7. A chemical storeroom has an 80% alcohol solution and a 30% alcohol solution. How many milliliters of each should be used to obtain 50 milliliters of a 60% solution?

8. The sum of a number and its reciprocal is 26/5. Find the number.

9. A fraternity charters a bus for a ski trip at a cost of $360. When 6 more students join the trip, each person's cost decreases by $2. How many students were in the original group of travelers?

10. The equilibrium point in economic theory is that price where demand equals supply. For the following supply and demand equation, find the equilibrium point. $d=\dfrac{1500}{p}$, $s=500p-250$

11. Solve the following inequalities and graph it.

(a) $\dfrac{x}{2}-9<\dfrac{1-2x}{3}$ (b) $1<3x-2\le6$ (c) $x^2-2x\ge15$ (d) $\dfrac{x-1}{2x-3}>0$ (e) $|3x+2|\le1$

Math 165/166

1. (a) $x = -1$ (b) $x = \dfrac{-9}{2}$ (c) $y = 4$ (d) $x = 13/15$ (e) $x = 7$ (f) $x = \dfrac{3}{4}$ (g) $x = 6$ (h) no solution

(i) $x = \pm\sqrt{\dfrac{3}{2}} + 1$ (j) $x = 3$ or $x = \dfrac{1}{2}$ (k) $1 \pm \sqrt{3}$ (l) $x = 7$ (m) $x = 0$ or $x = \dfrac{2}{3}$

2. (a) $x = \dfrac{5}{k+6}$ (b) $x = \dfrac{5-y}{2y-4}$ (c) $x = \dfrac{1}{a-c}$

3. $60

4. $2,000 for 2% & $6,000 for 4%

5. 5 lb

6. 4.8 hours

7. 30ml for 80% solution & 20ml for 30%

8. 5 or 1/5

9. 30

10. $2.00

11. (a) $x < 8$ (b) $1 < x \le \dfrac{8}{3}$ (c) $x \le -3$ or $x \ge 5$ (d) $x < 1$ or $x > 1.5$ (e) $-1 \le x \le -\dfrac{1}{3}$

This is the brief list of topics we have done in class. Please make sure you understand those key concepts very thoroughly.

Chapter 2. Equations and Inequalities

Sec 2.1 Linear equations in one unknown
Equation vs algebraic expression
Identity, Conditional equation, equation that has no solution
Solve several kinds of linear equations
Solve the equation for the given variable

Sec 2.2 Applications: From Words to Algebra
Understand the steps
Prices and discount
Simple Interest
Distance problem
Rate (Work) problem
Mixture problem

Sec 2.3 The Quadratic Equation
What is a quadratic equation?
Factoring method
Special Cases using the square root. Please don't forget negative square root.
Quadratic Formula   Note: You must know how to find the numeric value of the answer using the calculator.
Competing the square
The Discriminant
Radical equations

Sec 2.4 Applications of Quadratic Equations
Pool Problem
Work Rate problem
Cost, Revenue, Profit problem
Group Share problem
Science problem

Sec 2.5 Inequalities: Linear, Quadratic and rational inequalities
How to write intervals correctly?
Compound inequalities
Critical Values
Steps to solve inequalities

Sec 2.6 Absolute value equations and inequalities
Absolute equations, inequalities
Application