Math 114
Midterm 1
Review

Solve for x.

[1] $|2x + 1| = 5$ [2] $3 - 2|x + 1| = 4$ [3] $|2x - 3| < 5$ [4] $|4x + 1| > 9$

Solve.

[5] $2x + 3y = -1$, $5x - 3y = 29$ [6] $3x + 2y = 4$, $5x + 4y = 10$ [7] $2x + 3y = 31$, $5x + 4y = 67$

Write equations for the following problems, then solve.

[8] A number divided by twelve is equal to eight divided by three.

[9] Five divided by four is equal to the sum of a number and seven divided by twelve.

[10] A number divided by six is equal to the sum of that number and two divided by twelve.

[11] A number divided by seven is equal to one divided by the sum of that number and six.

Write proportions for the following problems. YOU DO NOT NEED TO SOLVE THEM.

[12] A car can travel 387 kilometers on 24 liters of gas.
How far can it travel on 17 liters of gas ?

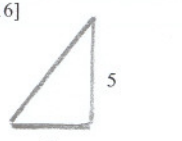
[13] A car can travel 185 kilometers on 13 liters of gas.
How many liters of gas does it need to travel 243 kilometers ?

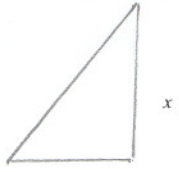
[14] On a blueprint, 3 centimeters represents 20 meters.
What length on the blueprint represents 37 meters ?

[15] A music service charges \$17 for 19 downloads.
How many downloads can be purchased for \$68 ?

Solve for x in the following similar triangles.

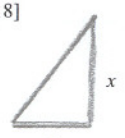
[16]





[17]

[18]



Simplify.

[19] $\dfrac{x^3+8x^2-48x}{3x^2+6x-72}$ [20] $\dfrac{6x^2-x-1}{2x^2+9x-5}$ [21] $\dfrac{\frac{3}{x-2}-2}{\frac{4}{x-2}+1}$ [22] $\dfrac{\frac{2}{x-3}-\frac{3}{x}}{\frac{5}{x-3}+\frac{2}{x}}$

Perform the algebraic operations and simplify.

[23] $\dfrac{4x^2-1}{x^2-16}\cdot\dfrac{x^2-4x}{2x+1}$ [24] $\dfrac{2x^2-x-6}{3x^2+4x+1}\cdot\dfrac{3x^2+7x+2}{2x^2+7x+6}$

[25] $\dfrac{x^2+2x-15}{x^2+3x-10}\div\dfrac{x^2-9}{x^2-9x+14}$ [26] $\dfrac{9x^2-25}{2x-2}\div\dfrac{6x-10}{x^2-1}$

[27] $\dfrac{x^2-5x}{2x-8}+\dfrac{12-2x}{2x-8}$ [28] $\dfrac{2x^2-x}{x^2-9}-\dfrac{x^2+12}{x^2-9}$

[29] $\dfrac{x}{x+2}+\dfrac{2}{x-3}$ [30] $\dfrac{x}{x+2}-\dfrac{6}{x^2+x-2}$

[31] $\dfrac{x+1}{x^2-7x+6}-\dfrac{x-2}{x^2-4x-12}$

Solve for x.

[32] $\dfrac{x-1}{3}=\dfrac{x+3}{15}$ [33] $\dfrac{x-1}{3}=\dfrac{8}{x+4}$ [34] $b-\dfrac{2c}{x}=a$ [35] $\dfrac{3}{x}-\dfrac{4}{y}=2$