

**East Los Angeles College**  
**Department of Mathematics**  
**Math 115**  
**Final Exam Study Guide**

Solve the following equations for x.

1)  $-x + 8 = -12$

2)  $3(x - 5) + 6 = 12$

3)  $\frac{x}{4} = \frac{3}{8}$

4)  $\frac{2}{5}x = -4$

5)  $x^2 - 16 = 0$

6)  $x^2 - 5x - 24 = 0$

7)  $(x + 2)(x - 7) = -18$

8)  $3x^2 - 17x + 10 = 0$

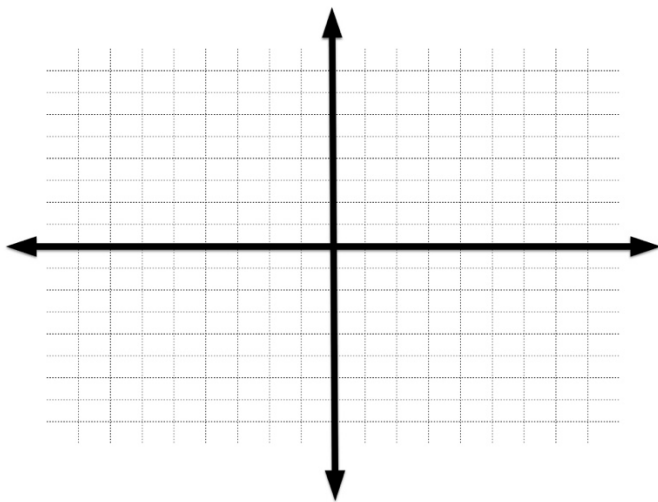
Solve and graph the following inequalities.

9)  $3x - 4 \geq x + 12$

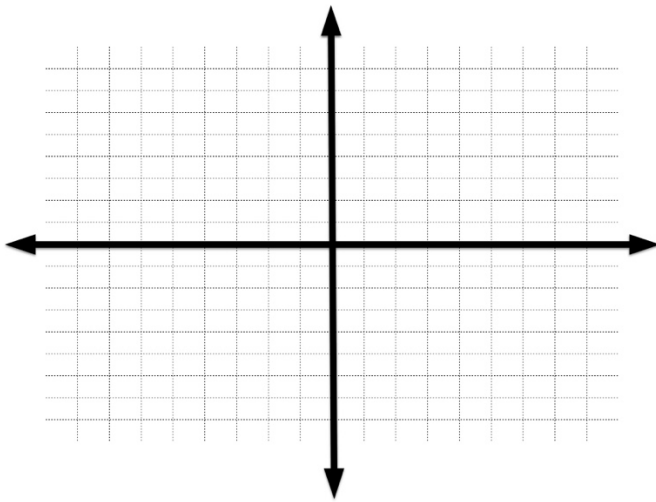
10)  $-2(x + 4) \geq -12$

Solve the following systems by graphing.

11)  $\begin{cases} 3x + y = -1 \\ x + 2y = -2 \end{cases}$



$$12) \begin{cases} x + 4y = -4 \\ 2x + y = 6 \end{cases}$$



Solve the following system by the addition (elimination) method.

$$13) \begin{cases} x - 2y = 8 \\ 3x + y = -11 \end{cases}$$

Solve the following system by the substitution method.

$$14) \begin{cases} x + 4y = 5 \\ 3x + y = -7 \end{cases}$$

Use properties of exponents to simplify the following.

$$15) 4x^2y \cdot 2xy^3$$

$$16) (3x^4)^3$$

$$17) \frac{8x^6}{2x}$$

$$18) 9xy^{-2} \cdot 3x^3y$$

$$19) (5xy^4)^{-2}$$

$$20) \frac{x^3yz^{-2}}{x^{-1}y^2z}$$

Add and Subtract the following.

$$20) (4x^2 - 3x + 5) + (x^2 - 5x + 3)$$

$$21) (4x^2 - 3x + 5) - (x^2 - 5x + 3)$$

Multiple the following

$$22) 5x(x - 4)$$

$$23) (4x + 1)(2x - 3)$$

$$24) (x + 6)(x - 6)$$

$$25) (x - 3)(2x^2 - 3x + 5)$$

Simplify the following rationals.

$$26) \frac{5x-15}{x^2-9}$$

$$27) \frac{x^2-3x-10}{x^2+2x-35}$$

Multiply/Divide the following rationals.

$$28) \frac{x^2-4x+4}{x^2-81} \cdot \frac{x^2+9x}{x-2}$$

$$29) \frac{x^2-16}{x^2+18x+81} \div \frac{3x-12}{x^2+19x+90}$$

Add/Subtract the following rationals.

$$30) \frac{x^2-8x}{x-2} + \frac{12}{x-2}$$

$$31) \frac{x^2}{x-5} - \frac{25}{x-5}$$

$$32) \frac{3}{10x} + \frac{2}{4x^2}$$

$$33) \frac{x}{x^2-9} - \frac{4}{7x-21}$$

$$34) \frac{x-5}{x-7} - \frac{x+3}{x+7}$$

$$35) \frac{x}{x^2-16} - \frac{5}{x^2+5x+4}$$