

**Math 10 Pre-AP – Review January 2005.**

Systems of equations.

Systems of inequalities: graph solution.

Regularity: data, domain, range and graphs.

Equations: solving equations, formula rearranging,  $y = mx + b$ , slope, x-intercept and y-intercept.

Factor: common factors, binomials, trinomials and 4-term polynomials.

Exponential functions.

Graphs: distance-time and velocity-time.

Functions: notation.

Quadratic and absolute value functions: standard and transformational form, reflection, horizontal and vertical translation, stretch, mapping notation and graphs.

Radicals: simplifying and operations with radicals.

Pythagorean theorem.

Trigonometry: find the missing side or angle.

1. Solve the following systems of equations:

a)  $5x + 2y = 11$   
 $x + y = 4$

b)  $x - y = -11$   
 $7x + 4y = -22$

c)  $6x - 7y = 47$   
 $2x + 5y = -21$

d)  $8x + 3y = 41$   
 $6x + 5y = 39$

e)  $5x + 7y = -15$   
 $2x + 9y = -6$

f)  $9x - 5y = 26$   
 $4x - 3y = 17$

g)  $5x + 2y = 10$   
 $5x + 2y = 20$

h)  $2x + 3y = -1$   
 $10x + 15y = -5$

2. Solve the systems of inequalities, find the points of intersection and state whether they are part of the solution.

a)  $y + 2x \geq 4$   
 $3x - y < 6$   
 $2x - 3y > 0$

b)  $x - 6y \leq -5$   
 $x > 4$

c)  $x + 2y \leq 2$   
 $x - 2y \geq -2$   
 $2x + 7y \geq 7$

d)  $x \geq 0$   
 $x + y < 6$

3. Determine the domain and range of the following relation.  
 $\{(-1,0),(-3,-2),(-5,2),(-1,6)\}$
4. The base charge of a taxi is \$5.00, plus \$0.30 per kilometer.
- What is the dependent variable? What is the independent variable?
  - Write the equation.
  - What distance could be travelled for \$32.00?
5. For each of the following equations, find the slope and the y-intercept.
- $y = -2x + 9$
  - $y = -3x + 8$
  - $2x + 4y = 12$
  - $3x - 2y - 7 = 0$
6. Find the slope for each line passing through the following points:
- $(-2,1), (-1,2)$
  - $(1,2), (2,2)$
  - $(3,2), (3,-4)$
7. Write each of the following equations in standard form.
- $5x + 3y = 12$
  - $-7x - 2y = 14$
8. Find the equation for each line.
- Passing through  $(-2,5)$  with a slope of 3.
  - Passing through  $(-1,4)$  and  $(2,7)$ .
  - With an x-intercept of -3 and a slope of  $\frac{1}{2}$ .
  - With an x-intercept of 5 and a y-intercept of -1.
9. Sketch the graph:
- Using a table of values.  
 $2x - y = 4$
  - Using the x-intercept and the y-intercept.  
 $3x - 2y = -6$
  - Using the y-intercept and the slope.  
 $y = -\frac{2}{3}x + 7$
10. A certain type of cells doubles every 20 minutes. If there are 225 cells at the beginning, How many cells will there be after:
- 20 minutes
  - 1 hour
  - 3 hours

11. Rearrange each formula.

a)  $P = 2L + 2t$ ,  $L =$

b)  $V = \pi r^2 h$ ,  $h =$

c)  $c^2 = a^2 + b^2$ ,  $a =$

d)  $Ax + By + C = 0$ ,  $y =$

e)  $\frac{x}{a} + \frac{y}{b} = 1$ ,  $b =$

f)  $F = \frac{m}{2} - at^2$ ,  $t =$

12. Simplify.

a)  $(6a^3b)(-2a^2b^2)$

b)  $\frac{(-54x^3y^2)}{(-6xy^2)}$

c)  $\frac{9x^2y^3 - 12xy^2 + 18x^2y^2}{-3xy}$

d)  $2x + (5x - 10) - (7x + 2)$

e)  $5(x + 9) - 4(x - 5) + 2(x + 10)$

f)  $(x - 3)(2x + 5)$

g)  $3m(4 - m) + 2m(m - 1) - 5(m^2 - m)$

h)  $-3(2x + 3)(5x - 1) - (3x + 2)^2$

i)  $3(2x - 3y)^2 - 4(x - y)(3x + 5y)$

13. Factor.

a)  $16a^2 - 9b^2$

b)  $y^2 - 8y - 48$

c)  $2m^2 + 2m - 112$

d)  $30t^3 - 120t$

e)  $r^2 - 2tr - 63t^2$

f)  $2xyz - 6wxz + 4xz$

g)  $a^4 - 5a^2 - 36$

h)  $t^2 - 25t - 26$

i)  $3x^2 + 17x + 10$

j)  $a^4 - 16$

k)  $6mx - 15my - 5ny + 2nx$

l)  $x^2 - 4x - 21$

m)  $25(x + 2y)^2 - 9(x - 2y)^2$

n)  $x^4 - 5x^2 + 4$

o)  $m^4 - 9m^2 - 112$

p)  $(a - b)^2 - 16(a + 2b)^2$

14. Simplify.

a)  $\sqrt{48}$

b)  $2\sqrt{8}$

c)  $\sqrt{72} - 3\sqrt{15} + \sqrt{48} + 2\sqrt{32}$

d)  $2\sqrt{50} - 3\sqrt{8} + 5\sqrt{18} + 7\sqrt{98}$

e)  $(2\sqrt{5})(3\sqrt{10})(-\sqrt{2})$

f)  $-2\sqrt{3}(3\sqrt{6} - 5\sqrt{5})$

g)  $(5\sqrt{2} + 3\sqrt{5})(3\sqrt{2} - 2\sqrt{5})$

h)  $\frac{\sqrt{3} - 5\sqrt{2}}{3\sqrt{2}}$

15. Solve.

a)  $2(x-4) = 5(x+1)$

b)  $2^x = 64$

c)  $2\left(m + \frac{4}{5}\right) = 7\left(m - \frac{1}{5}\right)$

d)  $x^2 + 8x = 0$

e)  $(x-3)(x+1) = 4(x^2-3)$

f)  $5^x - 8 = 117$

g)  $7 - 3p + 4p = 2 - 9p + 12$

h)  $\frac{2x+6}{7} = \frac{x-5}{2}$

i)  $\left(\frac{1}{2}\right)^x = 4^8$

j)  $2x^2 + x - 6 = 0$

k)  $\frac{3}{5}y + \frac{1}{2}y = 12$

l)  $5^{x-3} = 625$

m)  $\frac{1}{2}x^2 - x = \frac{5}{2}$

n)  $3^{7x-2} = 3^{4x+8}$

o)  $\frac{3h-8}{2} - \frac{1+2h}{3} = \frac{1-3h}{4}$

p)  $6^x - 9 = 207$

q)  $x^2 + 3x = 10$

r)  $(r+7) + 2(2r-1)^2 = (1-2r)(1-4r)$

s)  $2(x-1)^2 - 3(x-2)^2 = 6 - (x-1)^2$

t)  $4(3^{2x+1}) = 972$

u)  $\frac{3}{5}(2y-1) - \frac{2}{5}(3y+4) = \frac{1}{15}$

v)  $3^x = 9^3$

w)  $-5x + 4x^2 - 6 = 0$

x)  $3^x = 243$

y)  $\frac{1}{5}x + \frac{2}{5} = \frac{5}{6}x - \frac{3}{2}$

z)  $\frac{x+2}{x-1} = \frac{2x+3}{x+2}$

16. Find the value of the dependent variable.

a)  $f(x) = 2x^2 + 3x$   $f(-2) =$

b)  $g(a) = 5a^2 + 6a - 1$   $g(3) =$

c)  $A(t) = \frac{64}{t}$   $A(-4) =$

17. Find the value of the independent variable.

a)  $f(x) = 0.75x + 3.5$   $f(?) = 12.5$

b)  $v(t) = \frac{4}{5}t + 9$   $v(?) = 37$

c)  $S(h) = 24h + 13$   $S(?) = 133$