Review from last unit

27. Solve for x. $7x-10+6x-15+8x-5=180$
$21x-30=180$
$21x=210$

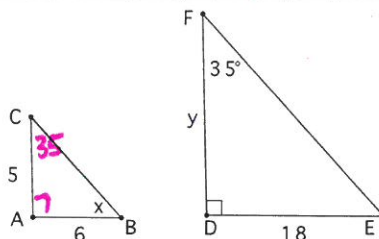Answer ___$X=10$___

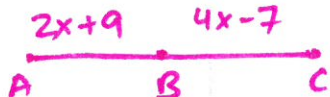7x - 10
6x - 15   8x - 5
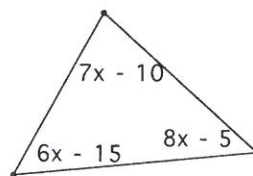
28. In the figure to the right, ΔABC ~ ΔDEF. What do x and y equal?

$\frac{5}{y}=\frac{6}{18}$
$90=6y$

x = ___$55°$___   y = ___15___

F 35°
C 35
5
A 6 B x
D 18 E
y

29. Given B is between A and C, AB = 2x +9, BC = 4x − 7, and AC = 38. Find BC.

2x+9   4x-7
A   B   C

$2x+9+4x-7=38$
$6x+2=38$
$6x=36$
$x=6$

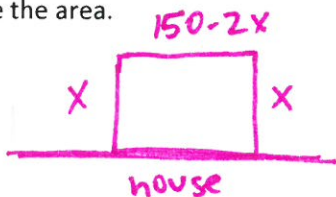$BC=4(6)-7=17$
$\boxed{BC=17}$

30. Write the equation of the parabola in the graph below. The vertex is at (11, 18).

(2,0)   (20,0)
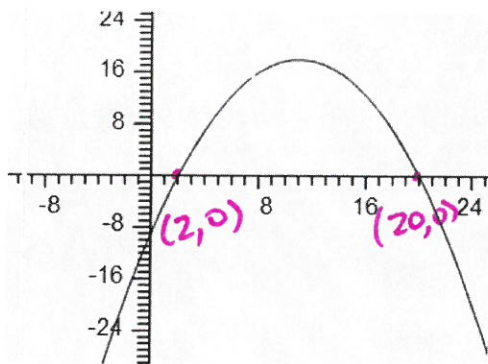
$y=-\frac{2}{9}x^2+\frac{44}{9}x-\frac{80}{9}$

$y=K(x-root)(x-root)$
$y=K(x-2)(x-20)$
$18=K(11-2)(11-20)$
$18=K(9)(-9)$
$\frac{18}{-81}=K$ $K=-\frac{2}{9}$

$y=K(x^2-22x+40)$
$y=-\frac{2}{9}(x^2-22x+40)$
$y=-\frac{2}{9}x^2+\frac{44}{9}x-\frac{80}{9}$

31. Meg is building a garden up against one side of her house. She has 150 feet of fencing. Find the dimensions of the dog's pen to maximize the area.

150-2x
x   x
house

$A=LW$
$=x(150-2x)$
$=150x-2x^2$

Find Maximum
$(37.5, 2812.5)$

$\boxed{37.5\ ft\ by\ 75}$

Solve each quadratic inequality. Express your solutions using set notation.

32. $x^2+5x\geq24$

$x^2+5x-24\geq0$
$(x+8)(x-3)=0$
$x=-8,3$

① $(-10)^2+5(-10)-24$
≥0 ✓
② $0^2+0-24\geq0$ ✗
③ $(10)^2+5(10)-24\geq0$ ✓

← |~~~~~~~~| →
-8   3

$\{x|-8\leq x\leq3\}$

33. $5x^2+10\geq27x$

$5x^2-27x+10\geq0$
$5x^2-25x-2x+10=0$
$5x(x-5)-2(x-5)=0$
$(5x-2)(x-5)=0$
$x=2/5,5$
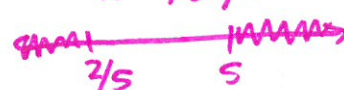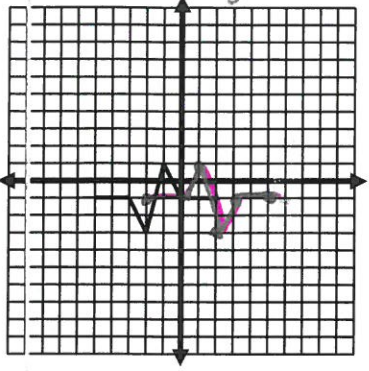
~~~| |~~~→
2/5   5

$5x^2-27x+10\geq0$

① $0-0+10\geq0$ ✓
② $5(1)^2-27(1)$
$+10\geq0$
$-12\geq0$ ✗
③ $5(10)^2-27(10)$
$+10\geq0$
$240\geq10$ ✓

$\{x|x\leq2/5\ or\ x\geq5\}$

U2 Test Review Answers
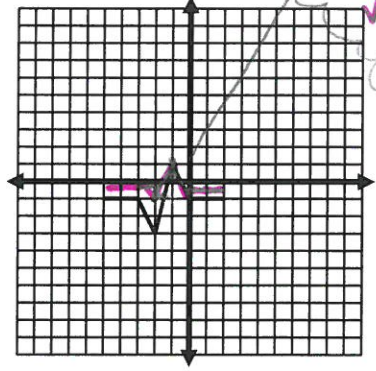
Unit 2 Packet   Honors Math 2   21

For each of the following, list the effect on the graph of Cardio, C(x), shown below. Then graph the new function.
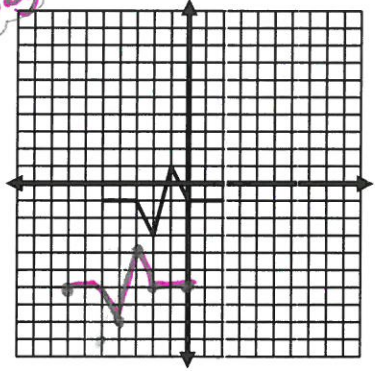
34. $y = C(-x)$ *reflect over y-axis*   35. $y = -\frac{1}{3}C(x)$ *vertical compression by 1/3 — multiply y values by $\frac{1}{3}$*   36. $y = C(x+2) - 5$ *left 2, down 5*
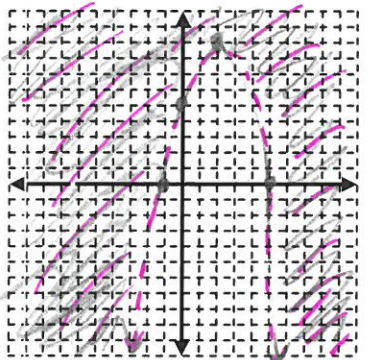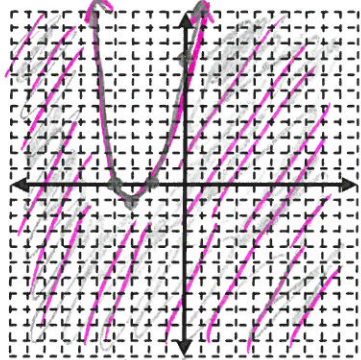
Graph each quadratic inequality. Remember to show your work algebraically to receive full credit!

37. $y > -x^2 + 4x + 5$ *→ dotted line*
$y = -1(x^2 - 4x - 5)$
$-1(x-5)(x+1)$

x-intercepts: $(5,0)$ $(-1,0)$
vertex: $(2, 9)$
is vertex a max or min? max
y-intercept: $(0,5)$
AoS: $x = 2$

Test pt: $(0,0)$
$0 > 0 + 0 + 5$ ✗

38. $y \le x^2 + 6x + 8$
$(x+2)(x+4)$

x-intercepts: $(-4,0)$ $(-2,0)$
vertex: $(-3,-1)$
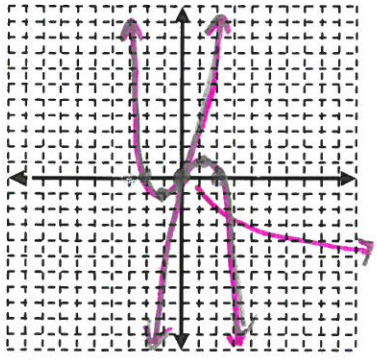is vertex a max or min? min
y-intercept: $(0,8)$
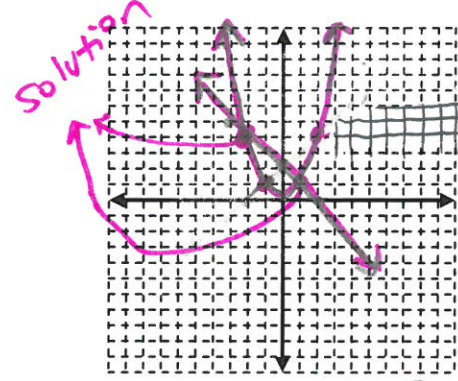AoS: $x = -3$

Test pt: $(0,0)$
$0 \le 0 + 0 + 8$ ✓

Solve each system of equations. Remember to show your work algebraically to receive full credit!

39. $y = -x^2 + 2x$ $-x(x-2)$ $x = 0, 2$ $V(1,1)$
$y = x^2 + 2x$ $x(x+2)$ $x = 0, -2$ $V(-1,-1)$

$y = -x^2 + 2x$
$y = x^2 + 2x$ Substitute!

$x^2 + 2x = -x^2 + 2x$
$2x^2 = 0$
$x = 0$
$y = 0 + 0$ $(0,0)$

40. $y = x^2$ $(0,0)$ $(2,4)$
$y = -x + 2$ solution

$y = x^2$
$y = -x + 2$
$-x + 2 = x^2$
$0 = x^2 + x - 2$
$0 = (x+2)(x-1)$
$x = -2, 1$

$y = (-2)^2$ $(-2,4)$
$y = 4$
$y = (1)^2 = 1$ $(1,1)$