Honors Algebra 2
Algebra Quiz #2 Review

Name KEY
Date_____ Per_____

Multiply the following polynomials. Write answers in simplest form.

1) $(3x-2)(x^2-6x+5)$

-2	$-2x^2$	$+12x$	-10
$3x$	$3x^3$	$-18x^2$	$15x$
	x^2	$-6x$	$+5$

1) $3x^3-20x^2+27x-10$

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

$+2$	$2x^2$	$10x$	$+8$
$-3x$	$-3x^3$	$-15x^2$	$-12x$
x^2	x^4	$5x^3$	$4x^2$
	x^2	$+5x$	$+4$

2) $x^4+2x^3-9x^2-2x+8$

Factor completely.

3) $x^2+5x-14$

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

3) $(x+7)(x-2)$

4) $4x^3+24x^2+20x$

$4x(x^2+6x+5)$

$4x(x+3)(x+2)$

4) $4x(x+3)(x+2)$

5) $9x^2-6x-8$

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

$+2$	$6x$	-8
$3x$	$9x^2$	$-12x$
	$3x$	-4

$-72x^2$

$-12x$ $6x$

$-6x$

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

6) $4x^2-36$

$4(x^2-9)$

$4(x+3)(x-3)$

6) $4(x+3)(x-3)$

Solve the quadratic equation by factoring.

7) $4x^2 - 2 = -7x$

$+7x \quad +7x$

$4x^2 + 7x - 2 = 0$

$(4x-1)(x+2) = 0$

$4x = 1$

$x = \frac{1}{4}$

$+2$	$8x$	-2
x	$4x^2$	$-x$
	$4x$	-1

$-8x^2$

$8x \quad -1x$

$7x$

$4x^2 + 7x - 2$

7) $x = \frac{1}{4}, -2$

8) $3x^2 + 27x - 108 = 0$

$3(x^2 + 9x - 36) = 0$

$3(x+12)(x-3) = 0$

$x + 12 = 0 \quad x - 3 = 0$

$x = -12 \quad x = 3$

8) $x = -12, 3$

9) $y^2 + 7y - 6y = 42$

$y^2 + y = 42$

$-42 \quad -42$

$y^2 + y - 42 = 0$

$(y+7)(y-6) = 0$

$y + 7 = 0 \quad y - 6 = 0$

$y = -7 \quad y = 6$

9) $y = -7, 6$

10) $n(n-4)(n-3) = 0$

$n = 0 \quad n - 4 = 0 \quad n - 3 = 0$

10) $n = 0, 3, 4$

11) A rectangular flower garden is planted in a rectangular yard that is 16m by 12m. The garden occupies $\frac{1}{6}$ of the area of the yard and leaves a uniform strip of grass around the edges. Find the dimensions of the garden. (Hint: Draw a picture)

$6\overline{)192}$ = 32, -18, 12

$(16-2x)(12-2x) = \frac{1}{6}(192)$

$192 - 56x + 4x^2 = 32$

$-32 \qquad -32$

$160 - 56x + 4x^2 = 0$

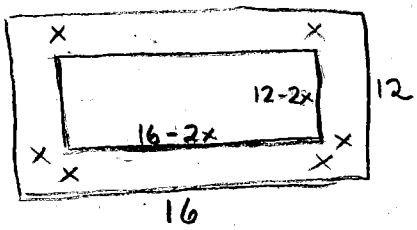
$4x^2 - 56x + 160 = 0$

$4(x^2 - 14x + 40) = 0$

$4(x-10)(x-4) = 0$

$x - 10 = 0 \qquad x - 4 = 0$

$x = 10 \qquad \boxed{x = 4}$



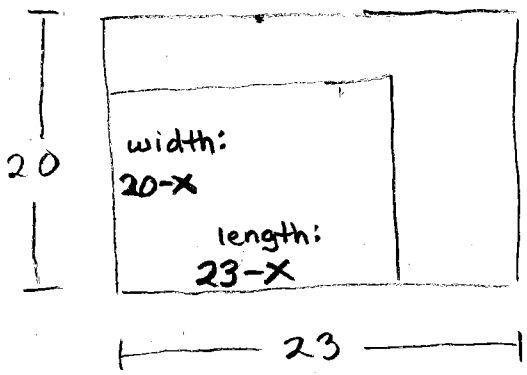
length = 16-2(4)
16-8 = 8m

width = 12-2(4)
12-8 = 4m

The dimensions of the garden are 8m by 4m.

12) Originally the dimensions of a rectangle were 20 cm by 23 cm. When both dimensions were decreased by the same amount, the area of the rectangle decreased by 120 square centimeters. Find the dimensions of the new rectangle. (Hint: Draw a picture)

let x = amt each side was reduced by



length × width = Area

original: $23 \cdot 20 = 460\text{cm}^2$

new: $(23-x)(20-x) = 460 - 120$

$23-3=20 \qquad 20-3=17$

$(23-x)(20-x) = 340$

$460 - 43x + x^2 = 340$

$-340 \qquad -340$

$120 - 43x + x^2 = 0$

$x^2 - 43x + 120 = 0$

$(x-40)(x-3) = 0$

$x \neq 40 \qquad \boxed{x = 3}$

The new rectangle is 20 cm × 17cm.

40 doesn't work b/c when it is plugged in to the expressions for length and width it makes the dimensions negative.

13) If $f(x) = -x^2 + 12x - 3$, $g(x) = 3x - 4$, and $h(x) = 2x^2 + 13x + 6$ find the following:

a. $g(f(1)) =$

$* f(1) = -(1)^2 + 12(1) - 3$

$-1 + 12 - 3$

$f(1) = 8$

$* g(8) = 3(8) - 4$

$\boxed{g(8) = 20}$

b. Find x when $f(x) = 17$

$17 = -x^2 + 12x - 3$

$x^2 - 12x + 20 = 0$

$(x-10)(x-2) = 0$

$\boxed{x = 2, 10}$

c. $f(g(1)) =$

$g(1) = 3(1) - 4$

$g(1) = -1$

$f(-1) = -(-1)^2 + 12(-1) - 3$

$-1 - 12 - 3$

$\boxed{f(-1) = -16}$

d. $f(x) + h(x) =$

$(-x^2 + 12x - 3) + (2x^2 + 13x + 6)$

$\boxed{x^2 + 25x + 3}$

e. $h(-3) = 2(-3)^2 + 13(-3) + 6$

$18 - 39 + 6$

$-21 + 6$

$\boxed{h(-3) = -15}$

f. $g(h(f(0))) =$

$* f(0) = -(0)^2 + 12(0) - 3$

$f(0) = -3$

$* h(-3) = 2(-3)^2 + 13(-3) + 6$

$18 - 39 + 6$

$-21 + 6$

$h(-3) = -15$

$* g(-15) = 3(-15) - 4$

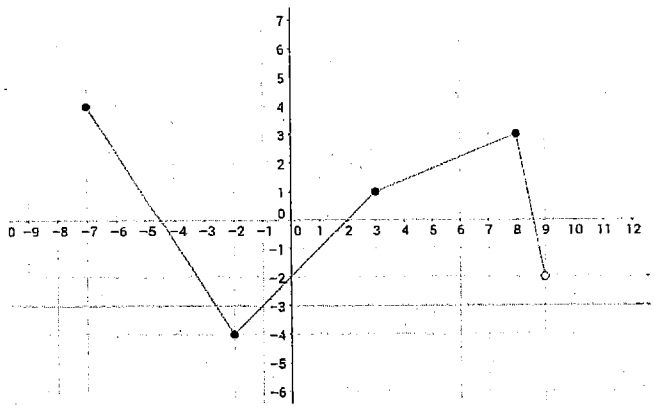
$-45 - 4 =$

$g(-15) = -49$

$\boxed{g(h(f(0))) = -49}$

14) Find the domain and range of the following graphs. You may use interval or inequality notation.

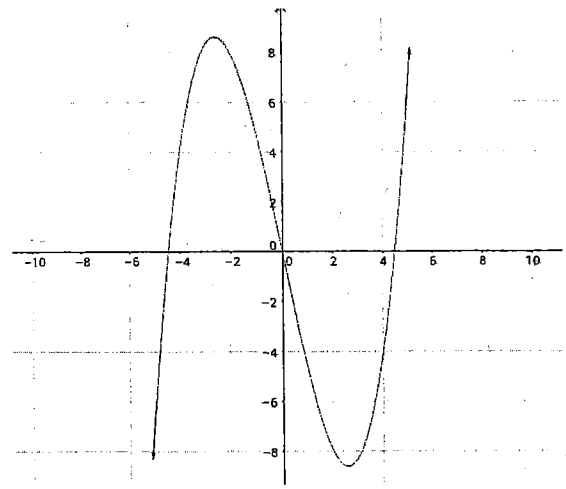
a.



Domain: $[-7, 9)$

Range: $[-4, 4]$

b.



Domain: $(-\infty, \infty)$

Range: $(-\infty, \infty)$