Algebra 2 Trig H
Chapter 3 Part 2 Review

Name:

**This is a packet of extra problems. It is not comprehensive! **

1) Use $f(x)=x^2-2x+1$ and $g(x)=2x-5$ to answer the following questions.

A) *f(-1)*

4

B) *g(1/2)*

-4

C) *f(g(3))*

0

D) *g(f(-4))*

45

E) *f(2-3a)*

$=(2-3a)^2-2(2-3a)+1$

$=4-12a+9a^2-4+6a+1$

$=9a^2-6a+1$

F) $\frac{g(x+h)-g(x)}{h}$

$=\frac{2(x+h)-5-[2x-5]}{h}$

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

$=2$

2) Use the table shown here to answer the following questions.

x	f(x)	g(x)	h(x)
-1	2	10	4
0	3	2	5
2	5	-1	7
4	-1	0	-2
5	0	7	-1
7	0	2	0

A) *f(5)* 0

B) *h(g(0))* 7

C) f(*h(2)*) 0

D) *g(f(4))* 10

E) $f^{-1}(5)$ 2

F) $h^{-1}(7)$ 2

3) Determine whether the functions below are inverses or not. Show all work to support your answer.

$$q(x)=\frac{2x-1}{4-x} \qquad p(x)=\frac{4x+1}{x+2}$$

$$q(p(x))=\frac{2\left(\frac{4x+1}{x+2}\right)-1}{4-\frac{4x+1}{x+2}}$$

$$=\frac{8x+2-x-2}{4x+8-4x-1}$$

$$=\frac{7x}{7}=x \checkmark$$

$$p(q(x))=\frac{4\left(\frac{2x-1}{4-x}\right)+1}{\frac{2x-1}{4-x}+2}$$

$$=\frac{8x-4+4-x}{2x-1+8-2x}$$

$$=\frac{7x}{7}$$

$$=x \checkmark$$

The composition $=x$ so they are inverses!

4) Graph $f(x)$, determine the domain and range of f, find f^{-1}, and graph f^{-1}

A) $f(x)=\sqrt{x+2}-5$

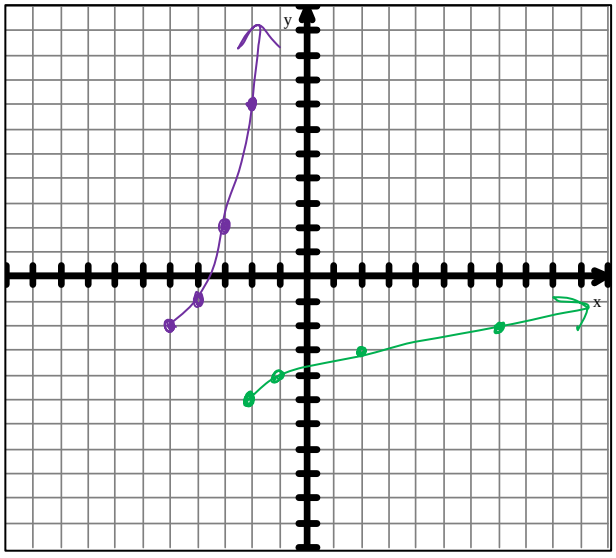
D of f: $[-2,\infty)$

$x=\sqrt{y+2}-5$

$(x+5)^2=y+2$

$y=(x+5)^2-2$

$f^{-1}(x)=(x+5)^2-2,\ x\geq -5$



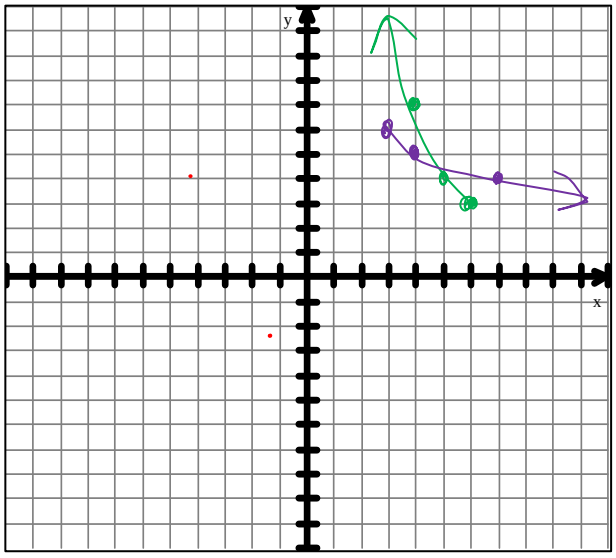
B) $y=(x-6)^2+3,\ x\leq 6$

D of f: $(-\infty,6]$

$x=(y-6)^2+3$

$\pm\sqrt{x-3}=y-6$

$f^{-1}(x)=-\sqrt{x-3}+6,\ x\geq 3$



5) Write the equation of a parabola in standard form with vertex (-2, 5) and pass through (6, 3).

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

$3 = a(64) + 5$

$-2 = 64a$

$y = -\frac{1}{32}(x+2)^2 + 5$

$= -\frac{1}{32}(x^2+4x+4)+5$

$= -\frac{1}{32}x^2 - \frac{1}{8}x + \frac{39}{8}$

6) Write the equation of a parabola passing through (0, -2), (2, -4), and (3, -14).

$-2 = a(0)^2 + b(0) + c$

$-4 = a(2)^2 + b(2) + c$

$-14 = a(3)^2 + b(3) + c$

$y = -3x^2 + 5x - 2$

7) Transform each equation to vertex form by completing the square.

A) $y = -3x^2 + 6x - 2$

$y = -3(x^2 - 2x) - 2$

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

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

B) $y = \frac{1}{2}x^2 - 7x + 13$

$y = \frac{1}{2}(x^2 - 14x) + 13$

$= \frac{1}{2}(x^2 - 14x + 49) + 13 - \frac{49}{2}$

$= \frac{1}{2}(x-7)^2 - \frac{23}{2}$

8) Graph the quadratic equation with at least 5 points.

$x = 6/-6 = -1$

$g(x) = -3x^2 - 6x + 5$

Axis of symmetry: $x = -1$

Vertex: $(-1, 8)$

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

Range: $(-\infty, 8]$

Interval for increasing: $(-\infty, -1]$

Interval for decreasing: $[-1, \infty)$

x-intercepts (approx. nearest tenth): $-2.2, .8$

y-intercept: $(0, 5)$