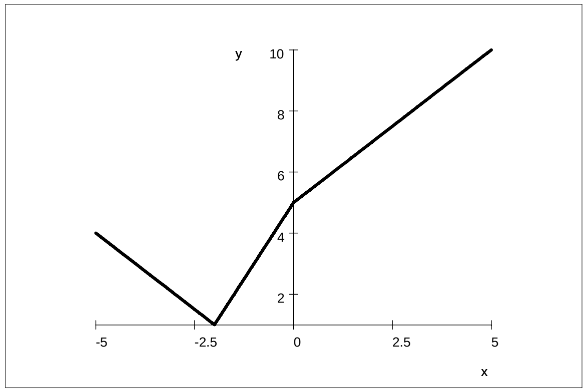
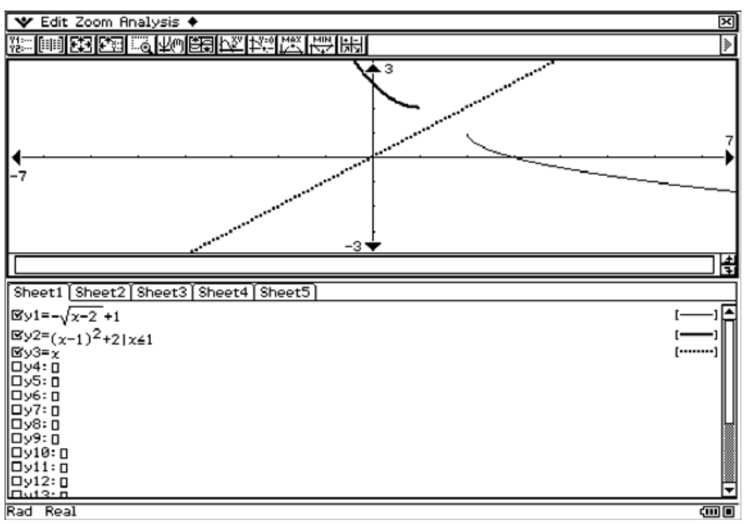
1. Let f be the function graphed below:



- **a.** Does f have an inverse in the domain of $[-4, 4]$? Ans. No. The function f violates the horizontal line test.
- **b.** If we restrict the domain of f to be $[-2, 2]$, does f^{-1} exist? Yes, if you restrict the domain to $[-2, 2]$, then the function passes the horizontal line test.
- **c.** If $f(-2) = 1$, $f(-1) = 3$ and $f(2) = 7$, find $f^{-1}(1), f^{-1}(3)$ and $f^{-1}(7)$. .[Ans. $f^{-1}(1) = -2, f^{-1}(3) = -1$ and $f^{-1}(7) = 2$].

2. If $f(x) = -\sqrt{x-2} + 1$

- **a.** Does f^{-1}exist? [Ans. Yes]
- **b.** Find the inverse of f. [$f^{-1}(x) = (x-1)^2 + 2,\ x \le 1$]
- **c.** Sketch $y = f(x)$ and $y = f^{-1}(x)$ together if f^{-1} exists; otherwise sketch $y = f(x)$ only.



3. If $h(x) = (3x-1)^{-2}$, find two functions f and g so that $h = f \circ g$.[Ans. $g(x) = (3x-1), f(x) = x^{-2}$]

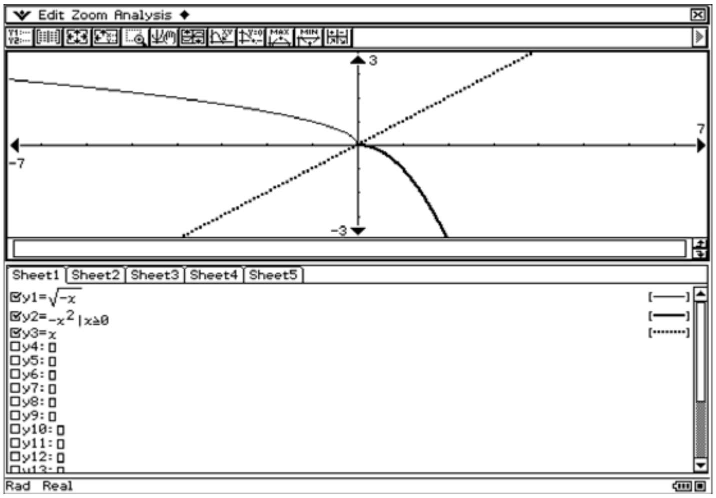
4. If $h(x) = \sqrt{(3x-1)}$, find two functions f and g so that $h = f \circ g$. [Ans. $g(x) = 3x - 1$ and $f(x) = \sqrt{x}$.]

5. Suppose $f(x) = \sqrt{x}$.

a. Find the function g so that $y = g(x)$ is a reflection of f with respect to $y - axis$. [Ans. $g(x) = \sqrt{-x}$.]

b. Find the inverse function for g. [$g^{-1}(x) = -x^2, x \geq 0$.]

c. Graph the functions g and g^{-1} together.



6. If $f(x) = \frac{3}{5}x - 1$, [done in class].

a. explain why f has an inverse function..

b. find the inverse function, f^{-1},

c. check if $f(f^{-1}(x)) = f^{-1}(f(x)) = x$,

d. graph f, and f^{-1} together.

7. If $f(x) = \sqrt{x+1}$ and $g(x) = 2x^2 - 3$. Find

a. $(f \circ g)(1) = f(g(1)) = 0$

b. $(g \circ f)(1) = g(f(1)) = 1$

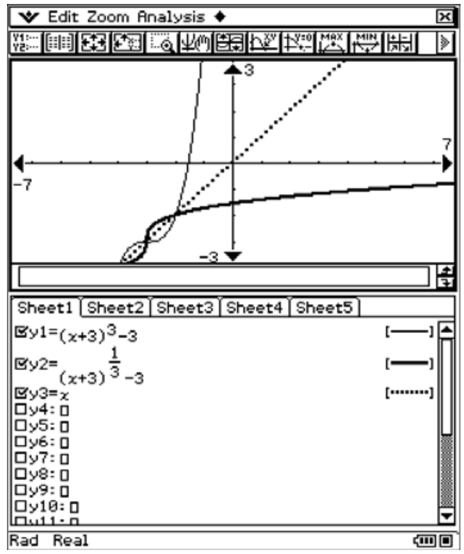
c. $(f \cdot g)(1) = f(1)g(1) = -\sqrt{2}$

8. Let $f(x) = x^3$,

a. find the function g so that $y = g(x)$ is a reflection of f with respect to the $x - axis$; [ans. $g(x) = -x^3$]

b. find the function h so that $y = h(x)$ is a shifting of $y = f(x)$ left 3 units and down 3 units. $[h(x) = (x+3)^3 - 3]$

c. does h have an inverse? If so, sketch $y = h(x)$ and $y = h^{-1}(x)$ together. [$h^{-1}(x) = (x+3)^{\frac{1}{3}} - 3$].



Edit Zoom Analysis
3
7
-7
-3
Sheet1 Sheet2 Sheet3 Sheet4 Sheet5
y1=(x+3)^3-3
y2=(x+3)^(1/3)-3
y3=x
y4:
y5:
y6:
y7:
y8:
y9:
y10:
Rad Real