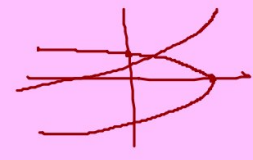


9. What is the domain of $f(x) = \frac{\sqrt{x-1}}{x^2-25}$

$$\begin{matrix} x \neq 5 \\ x \geq 1 \end{matrix}$$



calc

10. Solve for x: $\sqrt{x+6} = 6 - 2\sqrt{5-x}$

$$\underbrace{\sqrt{x+6}}_{y_1} = \underbrace{6 - 2\sqrt{5-x}}_{y_2}$$

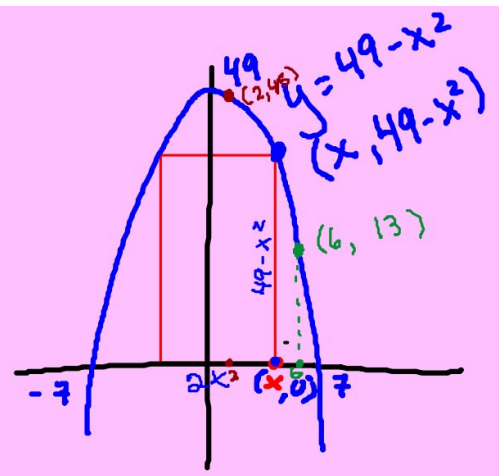
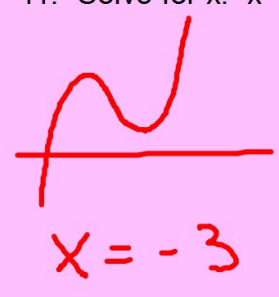
Intersection
 $x \approx 2.665$

$$\sqrt{x+6} - 6 + 2\sqrt{5-x} = 0$$

zeros
 $x \approx 2.665$

calc

11. Solve for x: $x^3 + x^2 - 4.99x + 3.03 = 0$



calc

12. A rectangle is inscribed between the x-axis and the parabola $y = 49 - x^2$ with one side along the x-axis.

a. Let x denote the x-coordinate of the point. Write the area A of the rectangle as a function of x.

$$A(x) = b \cdot h = 2x(49 - x^2) = -2x^3 + \dots$$

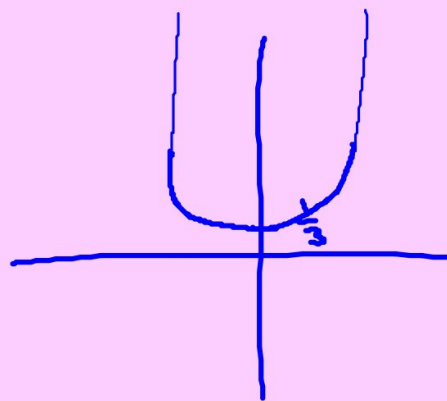
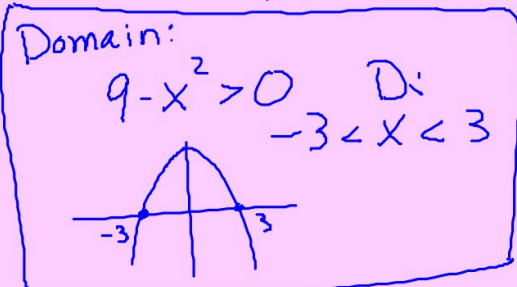
b. What values of x are in the domain of A? $0 < x < 7$

c. Find the maximum area that such a rectangle can have.

$$264.042 \text{ u}^2$$

Homework: pg 165: 1-3,5,7-10,14,18,20,22,25,30,33,34,37,44,48,53,54,68(TI)
pg 83: 40(calc), 51(calc)

18. $y = \frac{1}{\sqrt{9-x^2}}$

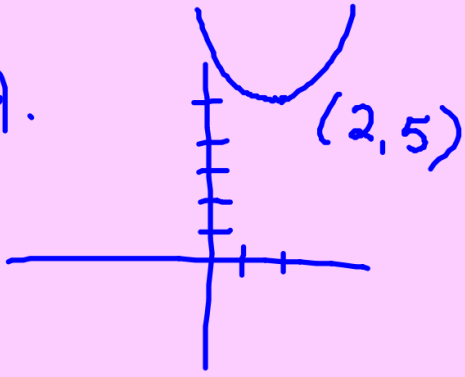


$$\lim_{x \rightarrow 3^-} \frac{1}{\sqrt{9-x^2}} = \infty$$

$$R: y \geq \frac{1}{3}$$

$$D: y = \sqrt{9-x^2}$$

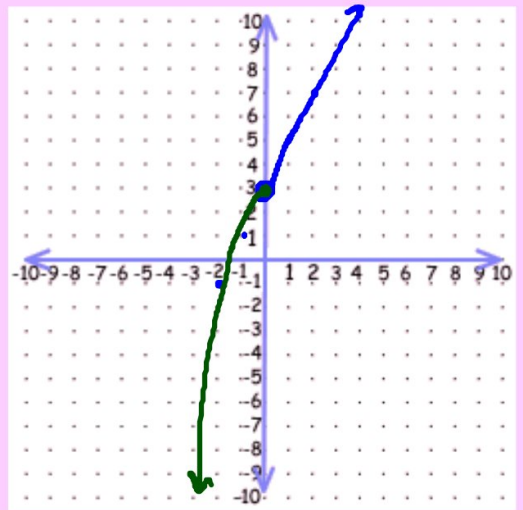
14.



D: all Reals

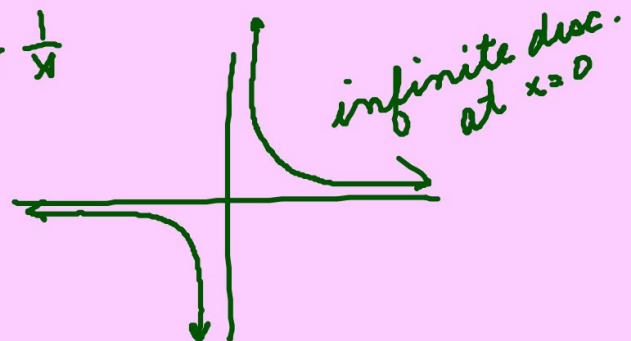
R: $y \geq 5$

$$20. \quad f(x) = y = \begin{cases} 2x+3, & x > 0 \\ 3-x^2, & x \leq 0 \end{cases}$$



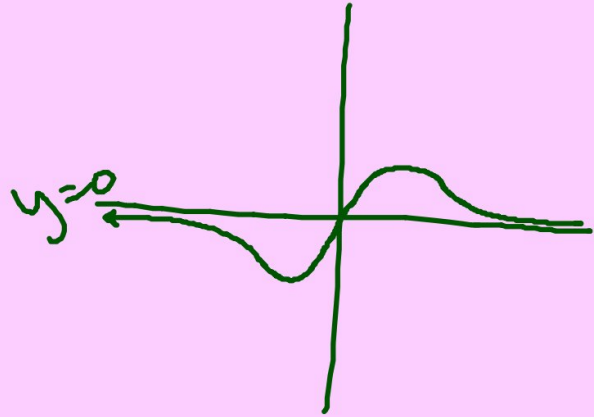
$$f(0) = 3$$

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



$$30. y = \frac{0x^2 + 6x}{x^2 + 1}$$

$$\text{HA } y = \frac{0}{1} = 0$$



$$40. |3x^{y_1} - 2| = 2\sqrt{x+8}^{y_2}$$



intersection

$$|3x - 2| - 2\sqrt{x+8} = 0 \quad \text{zero}$$

y_1

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

$$D: x \neq 0$$

$$R: y \neq 0$$

Inverse:

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

$$D: x \neq 0$$

$$R: y \neq 0$$

$$xy = 1$$

$$f^{-1}(x) = y = \frac{1}{x}$$

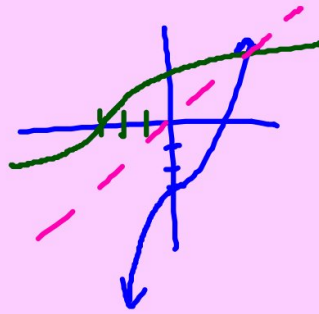
$$y = x^3 - 3$$

Inverse:

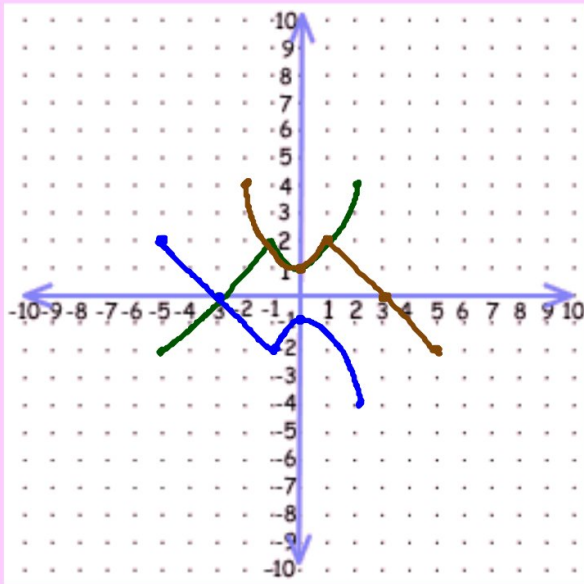
$$x = y^3 - 3$$

$$x + 3 = y^3$$

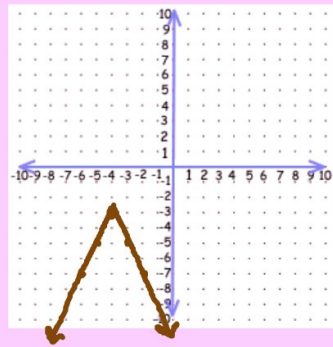
$$\sqrt[3]{x+3} = y$$



48.

 $f(x)$  $-f(x)$ 47. $f(-x)$

$$y = -2|x+4| - 3$$

abs max value $-3 @ x = -4$ inc $x \leq -4$ dec $x \geq -4$

$$\lim_{x \rightarrow +\infty} f(x) = -\infty$$

$$\lim_{x \rightarrow -\infty} f(x) = -\infty$$

$$53. f(x)$$

$$f \circ g = f(g(x))$$

$$g \circ f = g(f(x))$$

$$40. \underbrace{|3x-2|}_{y_1} = 2 \underbrace{\sqrt{x+8}}_{y_2}$$



Intersection

$$y = \frac{0x^2 + 3}{x^2 - 1}$$

VA $x=1$, $x=-1$

HA $y = \frac{0}{1} = 0$