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

domain: $x \geq 0$

$0 \leq x$

$[0, \infty)$

range: since this function has a constant value of 1 and we are subtracting $\sqrt{x}$, the range is $(-\infty, 1]$

---

4) $g(x) = \sqrt{x^2 - 3x}$

domain: $x^2 - 3x \geq 0$

$(x)(x-3) \geq 0$

$x = \boxed{0}$ | $x - 3 = 0$, $x = \boxed{3}$

	$(-\infty, 0)$	$(0, 3)$	$(3, \infty)$
(x)	neg	POS	POS
$(x-3)$	neg	neg	POS
$(x)(x-3)$	POS	neg	POS

$(-\infty, 0] \cup [3, \infty)$

range: $[0, \infty)$

---

6) $G(t) = \frac{2}{t^2-16} = 0 + \frac{2}{t^2-16}$

V.A.: $t^2 - 16 = 0$

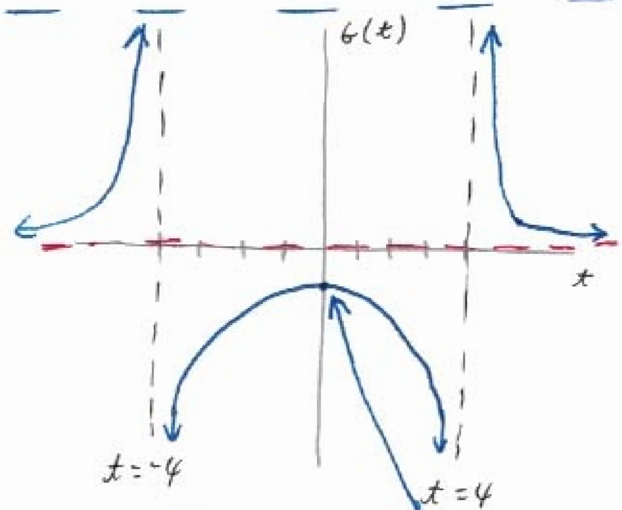
$(t+4)(t-4) = 0$

$t + 4 = 0$ | $t - 4 = 0$

$t = -4$ | $t = 4$

domain: $(-\infty, -4) \cup (-4, 4) \cup (4, \infty)$

H.A.: $y = 0$



$G(0) = \frac{2}{(0)^2-16} = \frac{2}{-16} = \frac{-1}{8}$ $(0, \frac{-1}{8})$

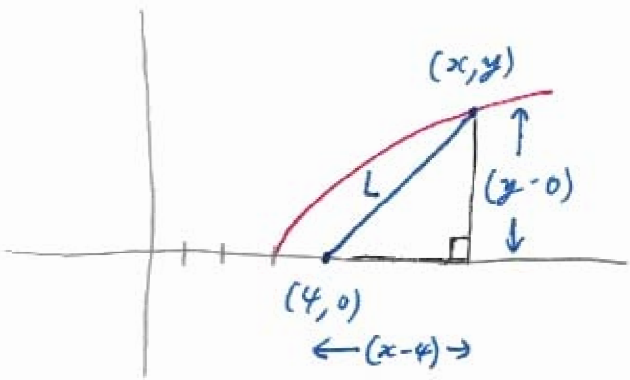
most likely, range is $(-\infty, \frac{-1}{8}] \cup (0, \infty)$

8-a) not a function of x because it fails the vertical line test; we have region where the vertical line crosses 2 & 3 times.

8-b) not a function of x because it fails the vertical line test; we have region where the vertical line crosses 2 times.

---

14) $y = \sqrt{x-3}$ points (x,y) and $(4,0)$ $L(y) = ?$



$L^2 = (x-4)^2 + (y-0)^2$

$L^2 = ((y^2+3)-4)^2 + (y)^2$

$L^2 = (y^2-1)^2 + y^2$

$L = \pm\sqrt{(y^2-1)^2 + y^2}$

$y = \sqrt{x-3}$

$y^2 = x-3$

$y^2+3 = x$

$L(y) = \sqrt{(y^2-1)^2 + y^2}$

---

16) $f(x) = 1 - 2x - x^2$ since $f(x)$ is a polynomial
domain: $(-\infty, \infty)$

---

18) $g(x) = \sqrt{-x}$

domain: $-x \geq 0$

$0 \geq x$

$x \leq 0$

$(-\infty, 0]$

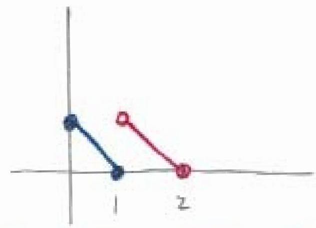
20) $G(t) = \frac{1}{|t|}$

V.A.: $|t| = 0$

$t = 0$

domain: $(-\infty, 0) \cup (0, \infty)$

26) $g(x) = \begin{cases} 1-x & 0 \le x \le 1 \\ 2-x & 1 < x \le 2 \end{cases}$



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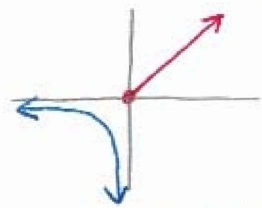
28) $G(x) = \begin{cases} \frac{1}{x} & x < 0 \\ x & 0 \le x \end{cases}$



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48) $f(x) = x^{-5} = \frac{1}{x^5}$

$f(-x) = \frac{1}{(-x)^5} = \frac{1}{-x^5} = \frac{-1}{x^5} = -\left(\frac{1}{x^5}\right) = -f(x)$ odd

---

50) $f(x) = x^2 + x$

$f(-x) = (-x)^2 + (-x) = x^2 - x$ neither

---

52) $g(x) = x^4 + 3x^2 - 1$

$g(-x) = (-x)^4 + 3(-x)^2 - 1 = x^4 + 3x^2 - 1 = g(x)$ even

---

54) $g(x) = \frac{x}{x^2-1}$

$g(-x) = \frac{(-x)}{(-x)^2-1} = \frac{-x}{x^2-1} = -\left(\frac{x}{x^2-1}\right) = -g(x)$ odd

---

56) $h(t) = |t^3|$

$h(-t) = |(-t)^3| = |-t^3| = |t^3| = h(t)$ even