Section 2.1
Solutions and Hints

by Brent M. Dingle

for the book:
Precalculus, Mathematics for Calculus 4th Edition
by James Stewart, Lothar Redlin and Saleem Watson.

54. Find the domain of g(x) = $\sqrt{7-3x}$

Recall you can only take the square root of non-negative numbers (sqrt(0) = 0).
So you must solve $7 - 3x \geq 0$
$-3x \geq 7$
$x \leq -7/3$ notice inequality flip due to division by negative

So the domain is x ∈ (-∞ , -7/3]

60. Find the domain of g(x) = $\sqrt{x^2-2x-8}$
Again you can only take the square root of non-negative numbers (sqrt(0) = 0).
So solve $x^2 - 2x - 8 \geq 0$
$(x-4)(x+2) \geq 0$

Thus equal zero occurs at x = -2 or x = 4.
So the intervals to examine are (-∞, -2), (-2, 4), (4, ∞)
Consider the table:

	(-∞, -2)	-2	(-2, 4)	4	(4, ∞)
sign of (x-4)	-	0	-	+	+
sign of (x+2)	-	0	+	+	+

We need (x – 4)(x + 2) to be positive (≥ 0) so the valid intervals are:
(-∞, -2] and [4, ∞)

Thus we say the domain is (-∞, -2] ∪ [4, ∞).