

1. Sketch each relation, stating the domain and range in each case:

(a) $y = \sqrt{25 - x^2}$

(b) $y = -\sqrt{1 - x^2}$

(c) $x = \sqrt{\frac{9}{4} - y^2}$

2. For each function, find the domain algebraically, sketch the graph, then state the range:

(a) $y = \sqrt{x-1}$

(b) $y = -\sqrt{x+3}$

(c) $y = \sqrt{3x-2}$

(d) $y = \sqrt{2-x}$

(e) $y = -\sqrt{5-2x}$

(f) $y = 3 + \sqrt{1+2x}$

3. Calculate the domain of each of the following functions [and the range for (d) – (h)]:

(a) $y = \sqrt{x-2} + \sqrt{4-x}$	(b) $y = \sqrt{x+1} + \sqrt{x+5}$	(c) $y = \sqrt{x-3} - \sqrt{1-x}$
(d) $y = \frac{1}{\sqrt{x+4}}$	(e) $y = 1 - \frac{2}{\sqrt{1-x}}$	(f) $y = \sqrt{x^2-9}$
(g) $y = \frac{1}{\sqrt{16-x^2}}$	(h) $y = \sqrt{1+x^2}$	

4. Sketch the following functions, stating the range in each case:

(a) $y = |x - 4|$

(b) $y = -|x + 3|$

$$(c) y = |x| + 3$$

$$(d) y = 1 - |x|$$

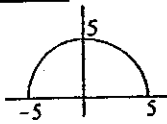
$$(e) y = |2x - 3|$$

$$(f) y = |3x + 7| - 2$$

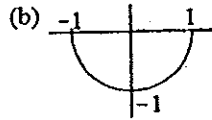
$$(g) y = 4 - 3|4 - x|$$

ANSWERS:

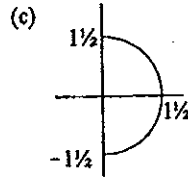
1. (a)



D: $-5 \leq x \leq 5$
R: $0 \leq y \leq 5$

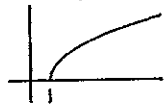


D: $-1 \leq x \leq 1$
R: $-1 \leq y \leq 0$

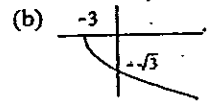


D: $0 \leq x \leq 1/2$
R: $-1/2 \leq y \leq 1/2$

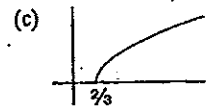
2. (a)



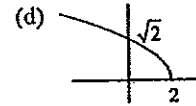
D: $x \geq 1$
R: $y \geq 0$



D: $x \geq -3$
R: $y \geq 0$

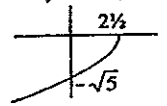


D: $x \geq 2/3$
R: $y \geq 0$

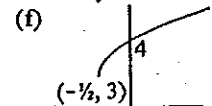


D: $x \leq 2$
R: $y \geq 0$

(e)

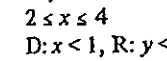


D: $x \leq 2 1/2$
R: $y \leq 0$

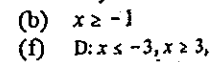


D: $x \geq -1/2$
R: $y \geq 3$

3. (a)



D: $2 \leq x \leq 4$
R: $y < 1$

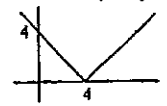


D: $x \leq -3, x \geq 3, R: y \geq 0$

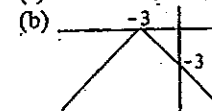
(c) no real x
(g) D: $-4 < x < 4, R: y \geq 1/4$

(d) D: $x > -4, R: y > 0$
(h) D: all real x, R: $y \geq 1$

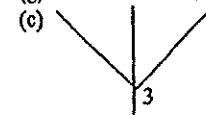
4. (a)



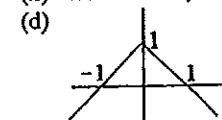
R: $y \geq 0$



R: $y \leq 0$

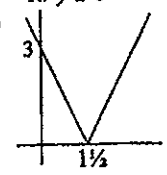


R: $y \geq 3$

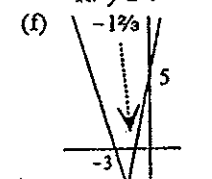


R: $y \leq 1$

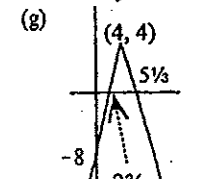
(e)



R: $y \geq 0$



R: $y \geq -2$



R: $y \leq 4$