

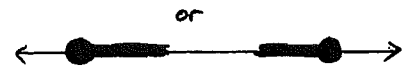
Piecemeal graphs can be referred to as "bits and pieces" graphs.

There are two main types of piecemeal graphs:

Continuous - graph has no breaks or holes.

Discontinuous - graph has at least one distinct break or hole.

When sketching be aware of open and closed end points.

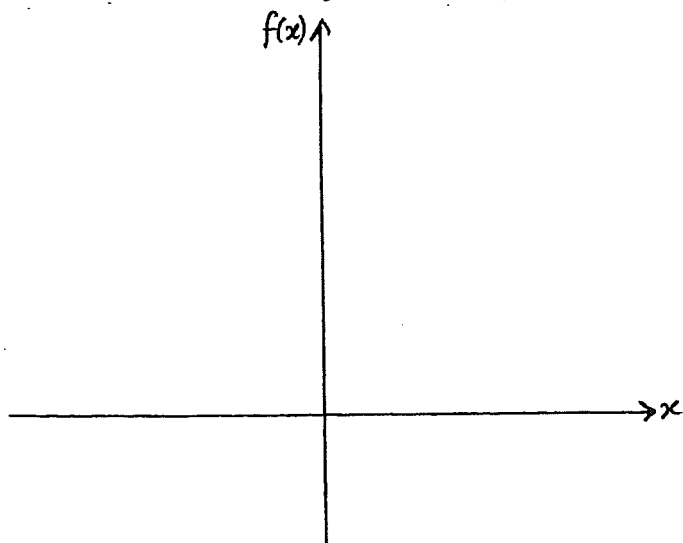
closed \geq, \leq  or

open $>, <$ 

Examples: **CONTINUOUS**

① Sketch each of the following:

a) $f(x) = \begin{cases} 0 & \text{if } x \leq 0 \\ 3x & \text{if } x > 0 \end{cases}$

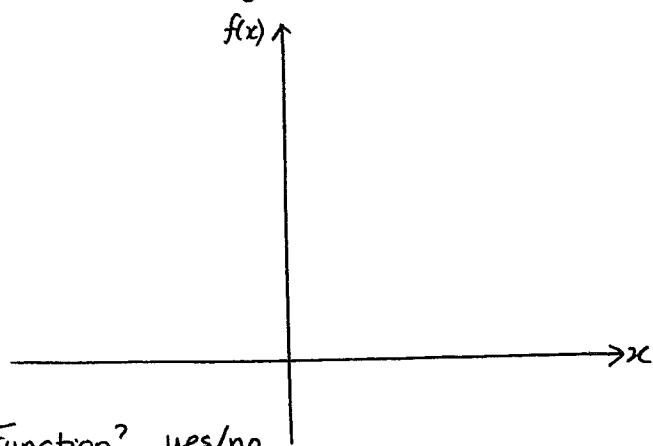


Function? yes/no

Domain:

Range:

b) $f(x) = \begin{cases} -x & \text{if } x < 0 \\ x^2 & \text{if } x \geq 0 \end{cases}$

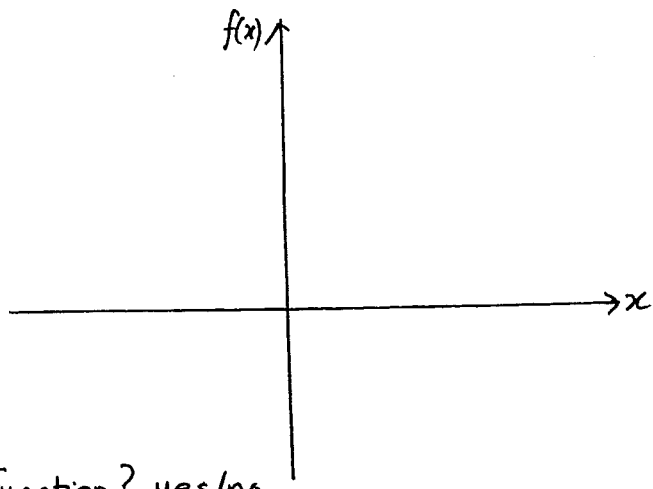


Function? yes/no

Domain:

Range:

c) $f(x) = \begin{cases} -1 & \text{if } x \leq 0 \\ x^2 - 1 & \text{if } x > 0 \end{cases}$

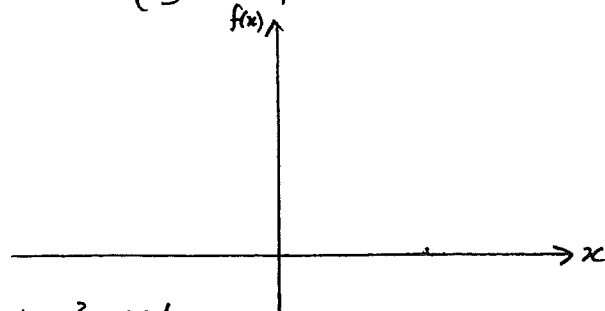


Function? yes/no

Domain:

Range:

d) $f(x) = \begin{cases} 1 & \text{if } x \leq 0 \\ 3^x & \text{if } x > 0 \end{cases}$

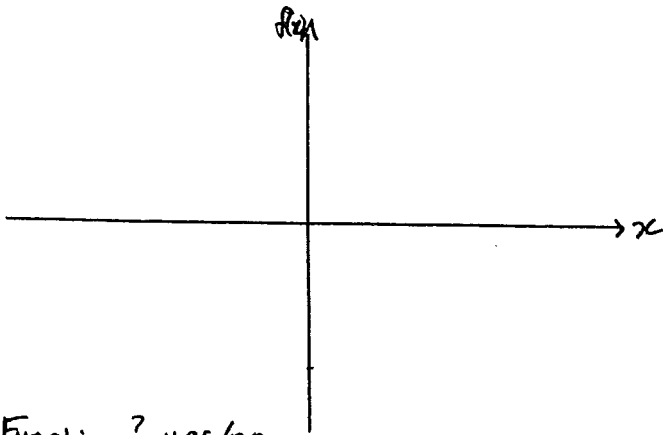


Function? yes/no

Domain:

Range:

e) $f(x) = \begin{cases} x+2 & \text{if } x \leq 0 \\ 2-x & \text{if } x > 0 \end{cases}$



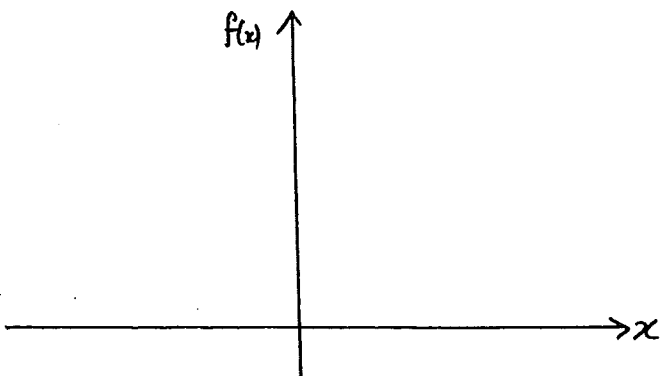
Function? yes/no

Domain:

Range:

DISCONTINUOUS

② a) $f(x) = \begin{cases} -x & \text{if } x < 0 \\ x & \text{if } x > 0 \end{cases}$

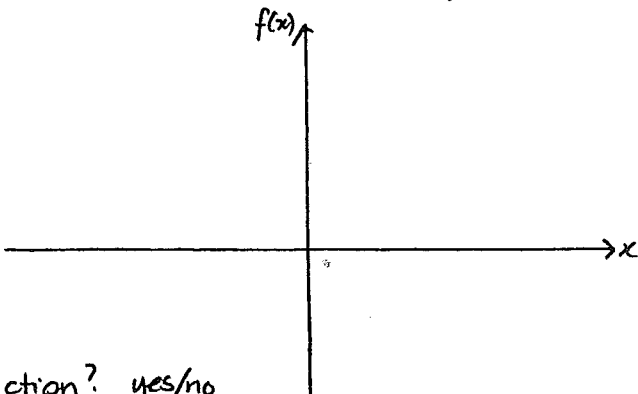


Function? yes/no

Domain:

Range:

b) $f(x) = \begin{cases} 1 & \text{if } x < 0 \\ 4-x^2 & \text{if } x \geq 0 \end{cases}$

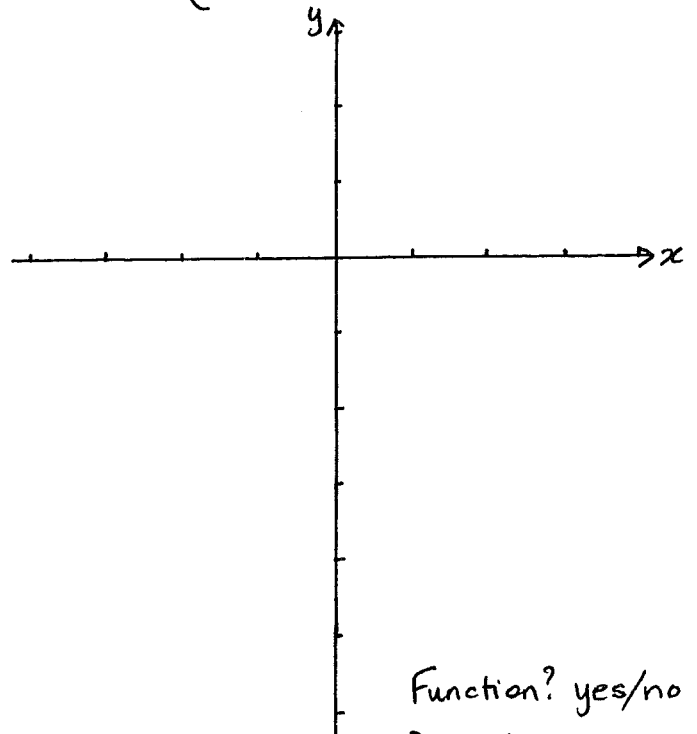


Function? yes/no

Domain:

Range:

c) $y = \begin{cases} 2x & \text{for } -3 \leq x < -1 \\ x^2 & \text{for } -1 \leq x \leq 1 \\ 3-x & \text{for } 1 < x \leq 3 \end{cases}$

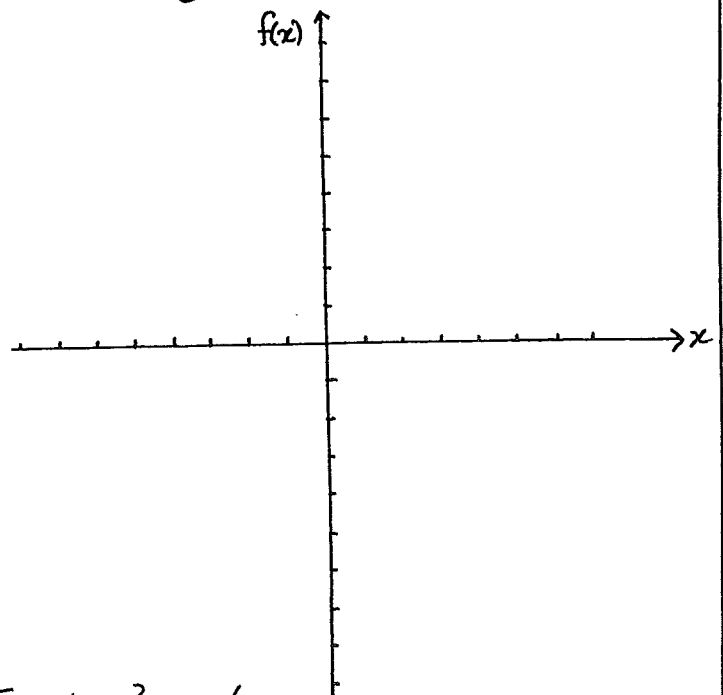


Function? yes/no

Domain:

Range:

d) $f(x) = \begin{cases} 3 & -4 \leq x \leq -2 \\ 5-x^2 & -2 < x < 2 \\ 3-2x & 2 \leq x \leq 4 \end{cases}$

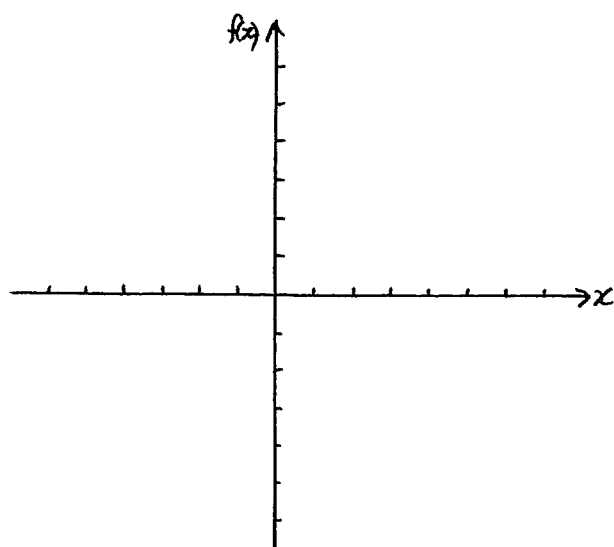


Function? yes/no

Domain:

Range:

e) $f(x) = \begin{cases} \frac{1}{x+2} & \text{for } x \neq -2 \\ 4 & \text{for } x = -2 \end{cases}$



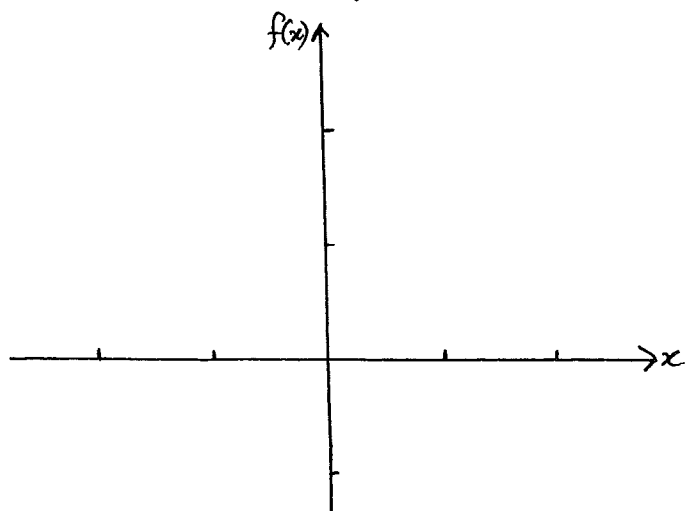
Function? yes/no

Domain:

Range:

One last piecemeal graph...

③ $y = \begin{cases} 0 & \text{for } x \leq -1 \\ \sqrt{1-x^2} & \text{for } -1 < x < 1 \\ 0 & \text{for } x \geq 1 \end{cases}$



Function? yes/no

Domain:

Range:

Substitution into Piecemeal Functions/Relations.

① For $g(x) = \begin{cases} x-1 & \text{for } x < 1 \\ x^2 & \text{for } 1 \leq x \leq 3 \\ 3 & \text{for } x > 3 \end{cases}$

find:

a) $g(-2)$

b) $g(3)$

c) $g(4)$

② For $h(x) = \begin{cases} x^3 & \text{for } x < -2 \\ (x-1)^2 & \text{for } -2 \leq x \leq 1 \\ 5-2x & \text{for } x > 1 \end{cases}$

Find:

a) $h(-3) =$

b) $h(-2) =$

c) $h(\frac{1}{2}) =$

d) $h(3) =$

③ $f(x) = \begin{cases} \frac{2}{3-x} & \text{for } x \neq 3 \\ -1 & \text{for } x = 3 \end{cases}$

Find:

(a) $f(-3)$

(b) $f(3)$

(c) $f(\frac{1}{2})$