Key

For each of the following, determine if the graph is a function and give the domain and range in interval notation. If it IS a function, also determine where the function is increasing/decreasing and positive/negative.

1.
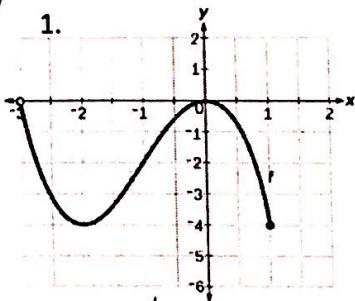
Function? yes

D: $(-3, 1]$

R: $[-4, 0]$

Incr $(-2, 0)$

Decr $(-3, -2) \cup (0, 1)$

+ never

− $(-3, 0) \cup (0, 1)$

f(-2) = -4

2.
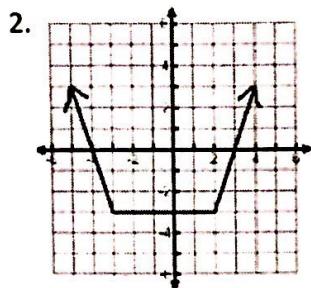
Function? yes

D: $(-\infty, \infty)$

R: $[-3, \infty)$

Incr $(2, \infty)$

Decr $(-\infty, -3)$

+ $(-\infty, -4) \cup (3, \infty)$

− $(-4, 3)$

f(x)=0 when x= -4 R 3

3.
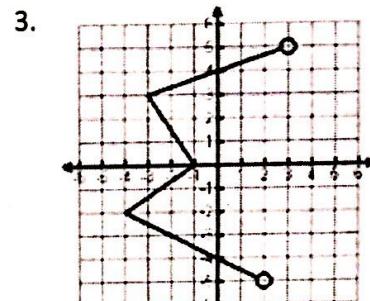
Function? No

D: $[-4, 3)$

R: $(-5, 5)$

Incr

Decr

+

−

4.
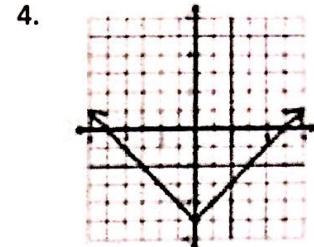
Function? yes

D: $(-\infty, \infty)$

R: $[-5, \infty)$

Incr $(0, \infty)$

Decr $(-\infty, 0)$

+ $(-\infty, -5) \cup (5, \infty$

− $(-5, 5)$

f(x)=0 when x= $-5 \text{ or } 5$

4.
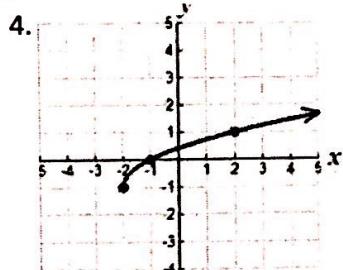
Function? yes

D: $[-2, \infty)$

R: $[-1, \infty)$

Incr $[-2, \infty)$

Decr Never

+ $(-1, \infty)$

− $(-2, -1)$

f(2) = 1

3f(-2)= $3(-1) = -3$

5.
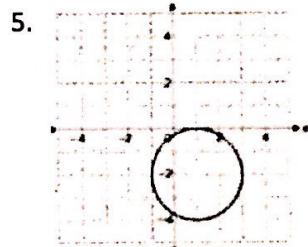
Function? No

D: $[-1, 3]$

R: $[-4, 0]$

Incr

Decr

+

6.
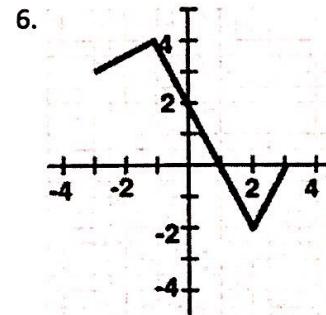
Function? yes

D: $[-3, 3]$

R: $[-2, 4]$

Incr $(-3, -1) \cup (2, 3)$

Decr $(-1, 2)$

+ $(-3, 1)$

− $(1, 3)$

Max? 4 or $(-1, 4)$

Min? -2 or $(2, -2)$

7.
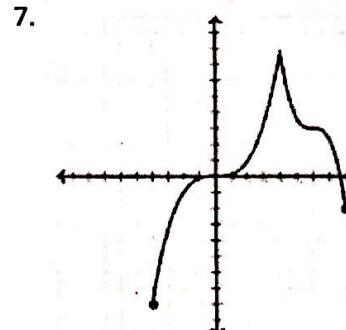
Function? yes

D: $[-4, 8]$

R: $[-8, 8]$

Incr $(-4, 4)$

Decr $(4, 8)$

+ $(0, 7.5)$

− $(-4, 0) \cup (7.5, 8)$

2f(-4) − 3f(4) =

$2(-8) - 3(8)$

$-16 - 24$

= $\boxed{-40}$