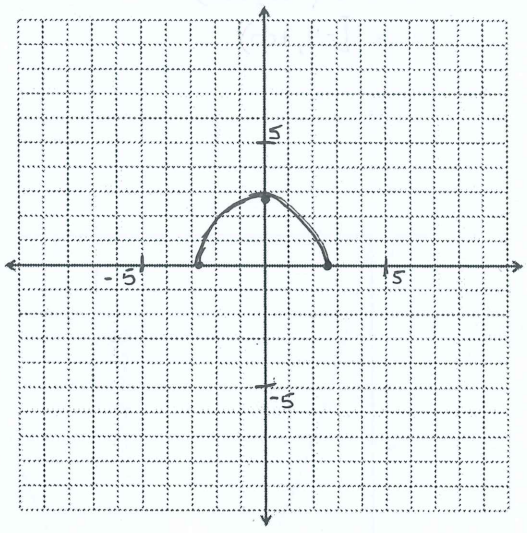
Name ANSWER KEY

PreCalculus; Sec 1.3a – Graphs of Functions

Find the domain and range of the function, then graph. Write your domain and range in interval notation.

1. $f(x) = \sqrt{7 - x^2}$



$7 - x^2 = 0$

$-x^2 = -7$

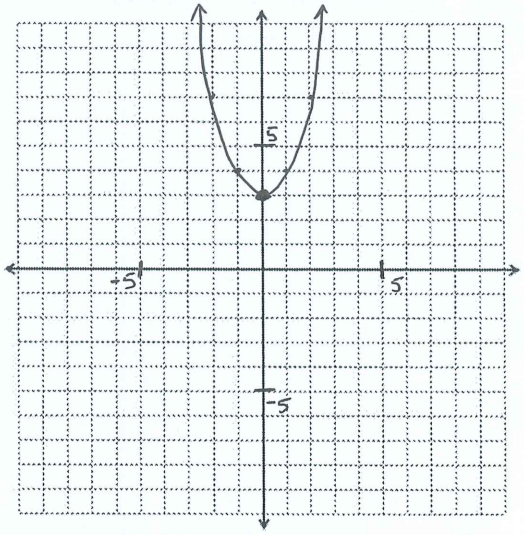
$x^2 = 7$

$x = \pm\sqrt{7}$

D: $[-\sqrt{7}, \sqrt{7}]$

R: $[0, \sqrt{7}]$

2. $g(x) = x^2 + 3$



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

R: $[3, +\infty)$

Prove algebraically if the function is *even*, *odd*, or *neither*. DO NOT use a graph to justify your answer.

3. $f(x) = x - 1$

$f(-x) = -x - 1$

$= -[x + 1]$

NEITHER

4. $g(x) = -x^3 + 7$

$g(-x) = -(-x)^3 + 7$

$= x^3 + 7$

$= -[-x^3 - 7]$

NEITHER

5. $k(x) = x^2 - 4$

$k(-x) = (-x)^2 - 4$

$= x^2 - 4$

EVEN

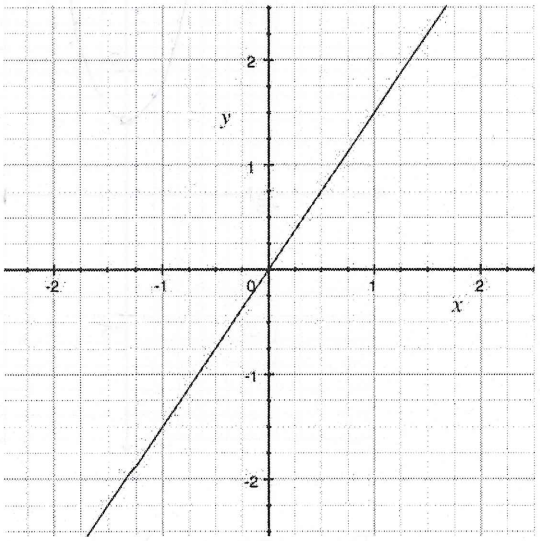
6. $h(x) = 3$

$h(-x) = 3$

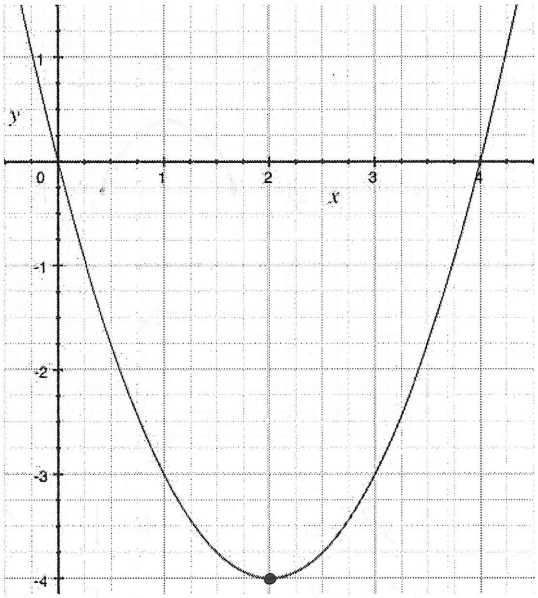
EVEN

Find the interval(s) where the function is *increasing* or *decreasing* (use interval notation). Then approximate any *relative extrema*, and determine the *domain* and *range* in interval notation.

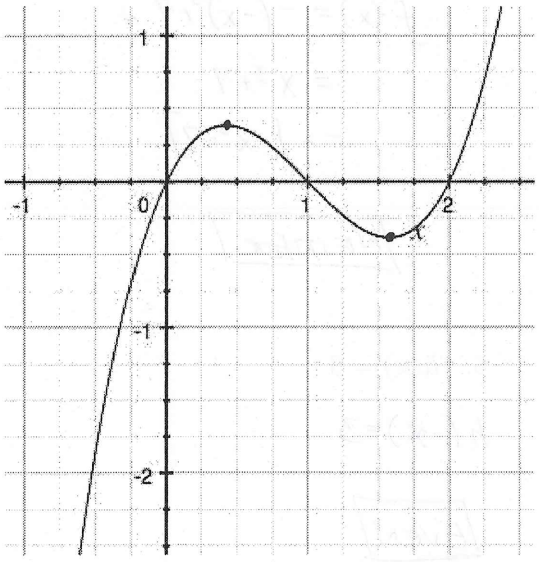
7. increasing: $(-\infty, +\infty)$
   decreasing: N/A
   relative extrema: N/A
   domain: $(-\infty, +\infty)$
   range: $(-\infty, +\infty)$



8. increasing: $[2, +\infty)$
   decreasing: $(-\infty, 2)$
   relative extrema: $(2, -4)$ — THIS IS IN ORDERED PAIR!
   domain: $(-\infty, +\infty)$
   range: $[-4, +\infty)$



9. increasing: $(-\infty, 0.5)$ $(1.5, +\infty)$
   decreasing: $(0.5, 1.5)$
   relative extrema: $(0.5, 0.5)$ $(1.5, -0.5)$
   domain: $(-\infty, +\infty)$
   range: $(-\infty, +\infty)$



10. increasing: $(-0.6, 0.3)$ $(1, +\infty)$
    decreasing: $(-\infty, -0.6)$ $(0.3, 1)$
    relative extrema: $(-0.6, -1.25)$ $(0.3, 0.4)$ $(1, 0)$
    domain: $(-\infty, +\infty)$
    range: $[-1.25, +\infty)$