

## APPC Lessons 2.1 to 2.4 Quiz

Name \_\_\_\_\_

1. If the ordered pair  $(-3, 7)$  is on the graph of an odd function with domain all reals, what other point is guaranteed to be on the graph?

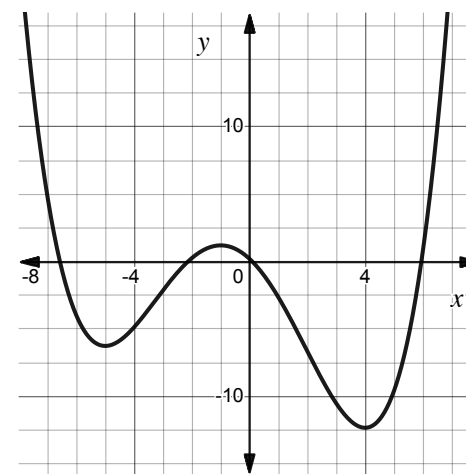
A)  $(-3, -7)$ B)  $(3, 7)$ C)  $(3, -7)$ D)  $(7, -3)$ 

-  2. Selected values of a polynomial function  $g$  are given in the table. Determine the degree of  $g$ .

$x$	$-2$	$0$	$2$	$4$	$6$	$8$
$g(x)$	$24$	$-4$	$8$	$36$	$56$	$44$

3. The graph of a polynomial function  $y = h(x)$  is shown.

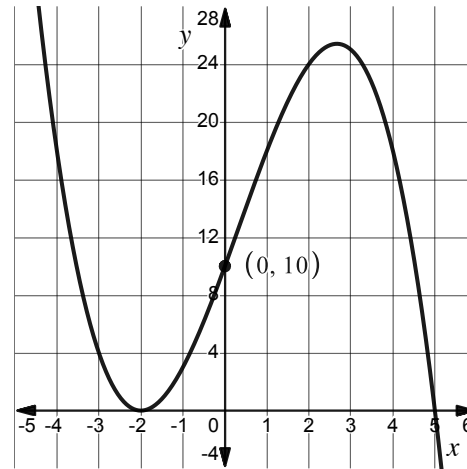
- a. Is the degree of this function even or odd?
- b. On which interval(s) is the rate of change of  $h$  positive?
- c. Is  $h$  changing faster at  $x = -2$  or  $x = 2$ ? Explain.
- d. Estimate the instantaneous rate of change of  $h$  at  $x = -5$ .



4. It is known for a function  $f$  that  $\lim_{x \rightarrow \infty} f(x) = -\infty$  and  $\lim_{x \rightarrow -\infty} f(x) = \infty$ . Which of the following could represent the equation for  $f$ ?

- A)  $f(x) = 7x^6 - 5x^4 - 3x^2 + 11$
- B)  $f(x) = -2x^5 + 8x^3 - 10x^2 - 20$
- C)  $f(x) = -3x^4 + 13x^3 + 20x^2 - 4x + 1$
- D)  $f(x) = 8x^2 - 14x + 9$

5. The graph of a function  $g$  is shown in the  $xy$ -plane. All  $x$ -intercepts are shown. Write the equation for  $g(x)$  in intercept form.



6. Let  $f(x) = x^3 - 7x + 3$ . Is  $f$  an even function, an odd function, or neither? Show the analysis that leads to your answer.
7. A polynomial function  $g$  has zeros at  $x = -1 - 6i$ ,  $x = 3$ , and  $x = 8 + \sqrt{11}$ . What is the minimum degree of  $g$ ? Give a reason for your answer.

8. Consider the function  $h(x) = 2(x - 3)^2(x - 1)^2(x + 4)$ .
- Identify the degree of  $h$ .
  - Describe the end behavior of  $h$  using limit notation.
  - Find the  $y$ -intercept of  $h$ .
  - State the real zeros of  $h$  and their multiplicity.

9. The graph of a polynomial function  $y = f(x)$  is shown. Let  $g$  be a function such that  $g(x) = f(x) + k$  for some constant  $k$ . For which value of  $k$  does  $g$  have exactly 6 real zeros, including multiplicity?

- $k = -4$
- $k = 2$
- $k = 6$
- $k = 11$

