Name _____ Date _____

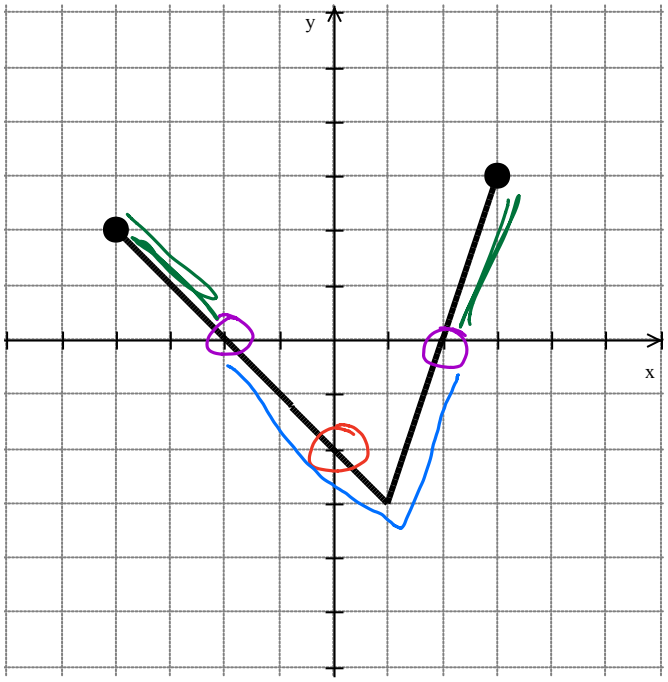
Thurgood Marshall Academy Public Charter High School – Pre-Calculus

Notes – Increasing, Decreasing, Constant

Learning Target:

- I can interpret key features of graphs and tables

A. The graph of *f* is shown here.



For what values of *x* is $f(x)$ zero? (what is another name for this?) x-intercepts

-2 and 2

What value is *f*(0)? (What is another name for this?)

-2

For what values of *x* is $f(x)$ positive?

$-4 \leq x < -2$

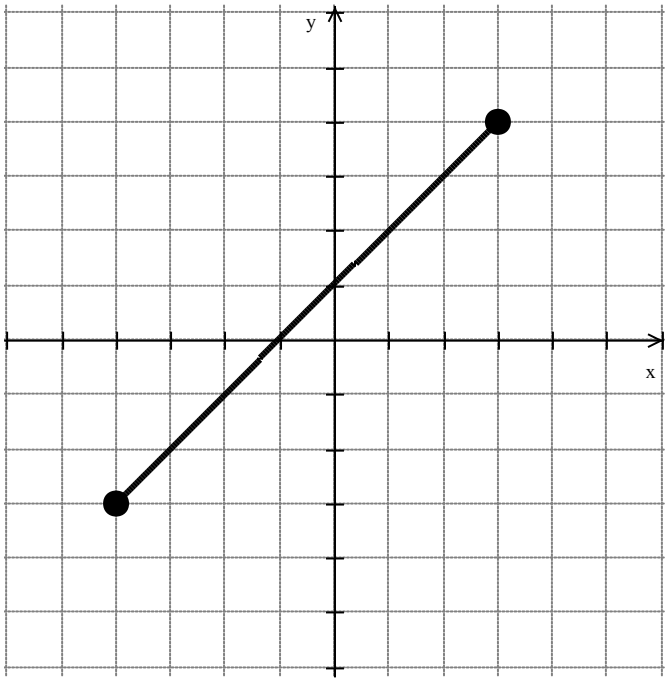
$2 < x \leq 3$

For what values of *x* is $f(x)$ negative?

$-2 \leq x \leq 2$

B.

The graph of *f* is shown here.



When is $f(x)$ zero?

-1

Where is $f(x)$ positive?

$-1 < x \leq 3$

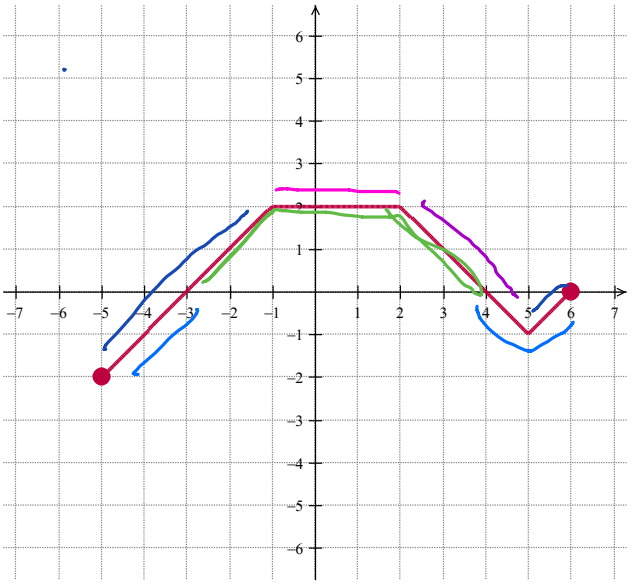
For what values of *x* is $f(x)$ negative?

$-4 \leq x < -1$

C. As we read a function from left to right, there are three possibilities:

- The function goes up. This is called increasing.
- The function goes down. This is called decreasing.
- The function is flat. This is called constant.

D. The graph of g is shown here.



For what values of x is $g(x)$ increasing?

$-5 \leq x \leq -1$ and $5 \leq x \leq 6$

For what values of x is $g(x)$ positive?

$-3 \leq x \leq 4$

When is $g(x)$ decreasing?

$2 \leq x \leq 5$

When is $g(x)$ negative?

$-5 \leq x \leq -3$
$4 \leq x \leq 6$

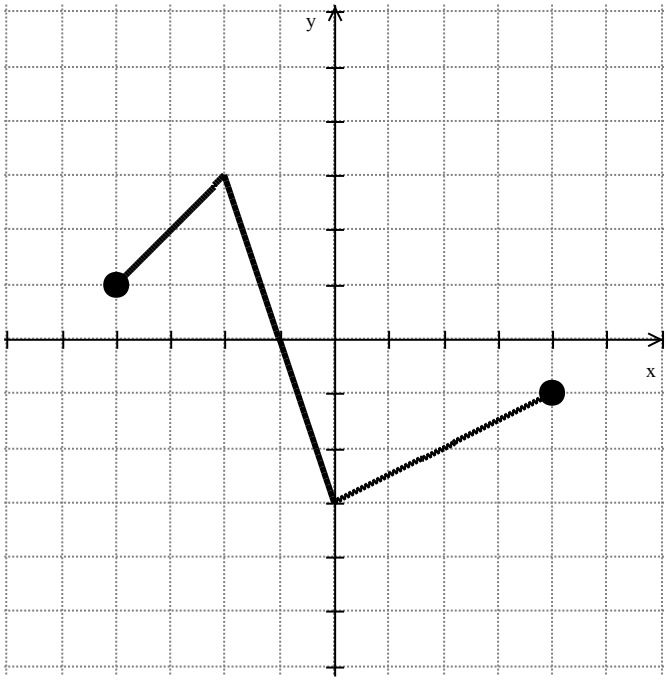
Where is $g(x)$ constant?

$-1 \leq x \leq 2$

Where is $g(x)$ zero?

$-3, 4, 6$

E. The graph of f is shown here.



When is $f(x)$ positive and increasing?

$-4 \leq x \leq -2$

When is $f(x)$ positive and decreasing?

$-2 \leq x \leq -1$

When is $f(x)$ negative and increasing?

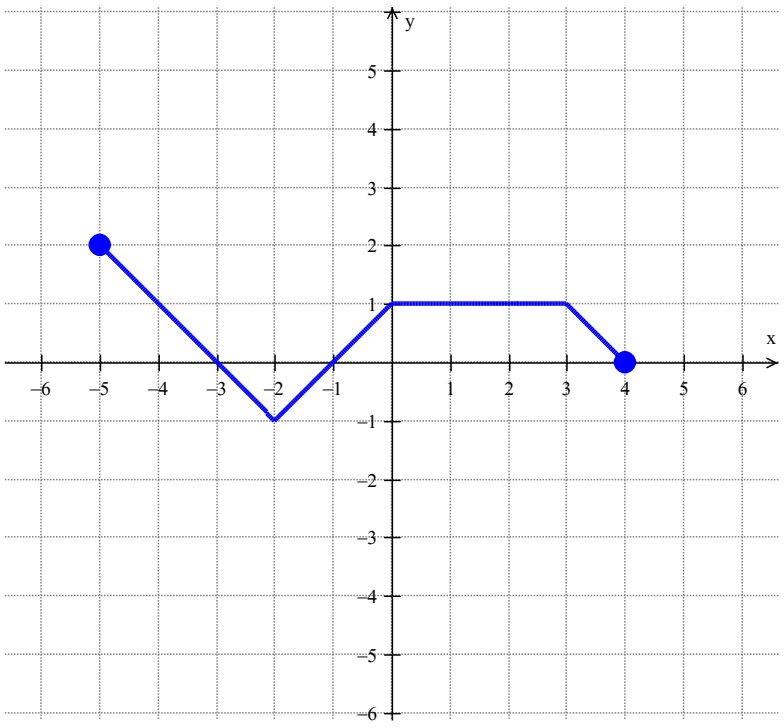
$0 \leq x \leq 4$

When is $f(x)$ negative and decreasing?

$-1 \leq x \leq 0$

Increasing, Decreasing, Constant

The graph of *g* is shown here.



1. For what values of *x* is $g(x)$ increasing?

$-2 \leq x \leq 0$

2. For what values of *x* is $g(x)$ positive?

$-5 \leq x \leq -3$

$-1 \leq x \leq 4$

3. When is $g(x)$ decreasing?

$-5 \leq x \leq -3$

$3 \leq x \leq 4$

4. When is $g(x)$ negative?

$-3 \leq x \leq -1$

5. Where is $g(x)$ constant?

$1 \leq x \leq 3$

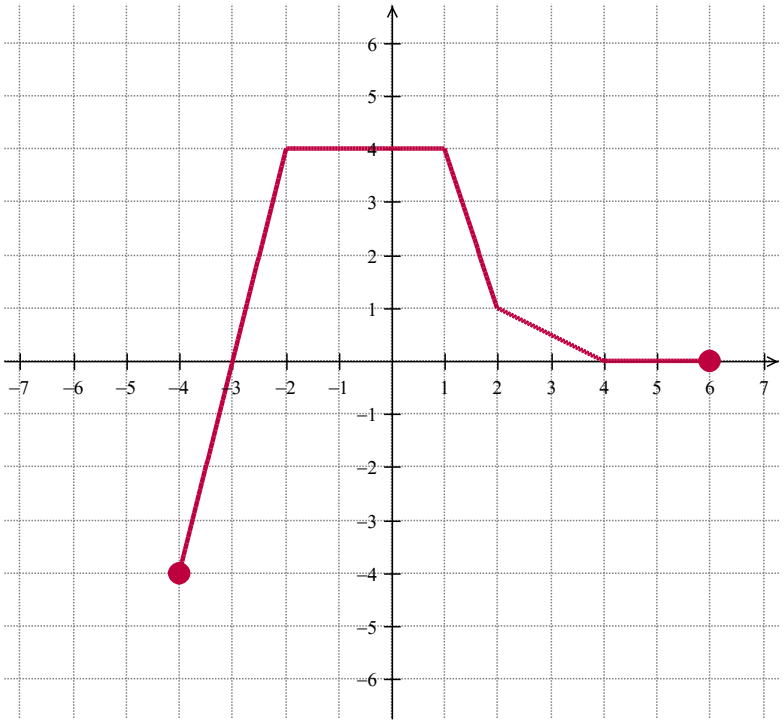
6. Where is $g(x)$ zero?

$-3, -1, 4$

~~**7.** For what values of *x* is $f(x)$ zero?~~

~~**8.** What value is f(0)?~~

The graph of *f* is shown here.



9. For what values of *x* is $f(x)$ increasing?

10. For what values of *x* is $f(x)$ positive?

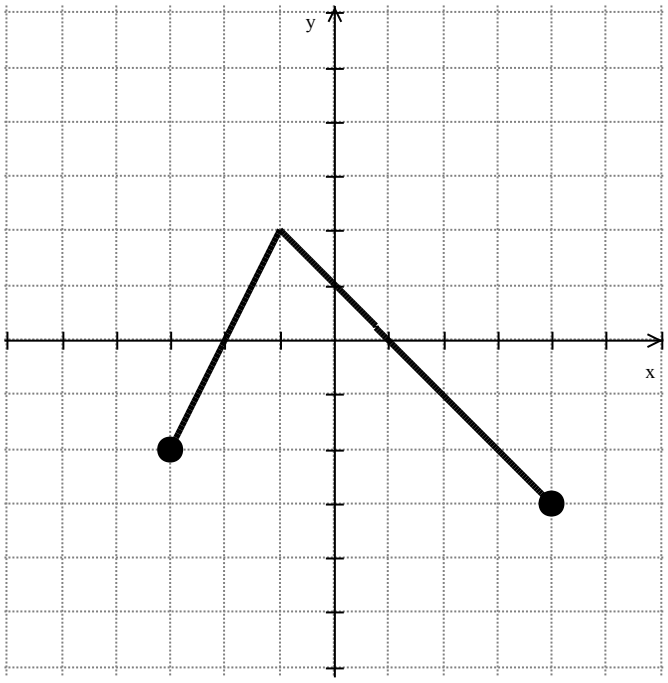
11. When is $f(x)$ decreasing?

12. When is $f(x)$ negative?

13. Where is $f(x)$ constant?

14. Where is $f(x)$ zero?

The graph of *f* is shown here.



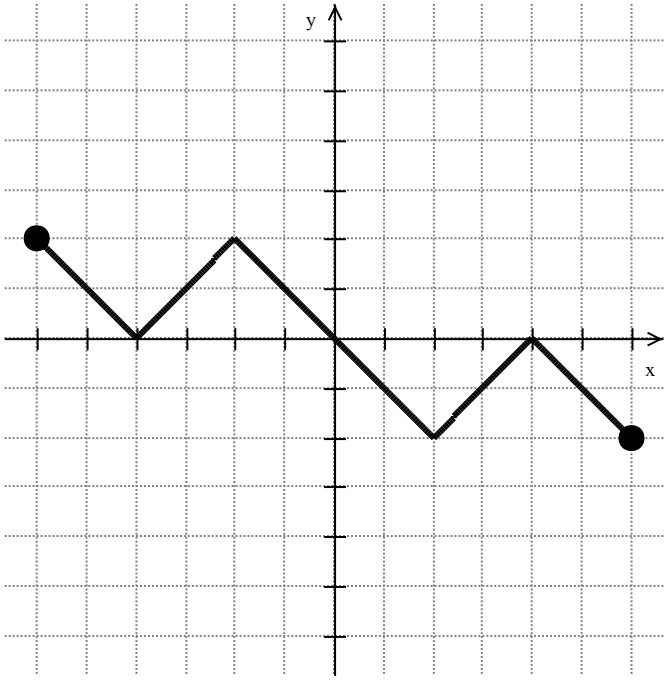
15. When is $f(x)$ positive and increasing?

16. When is $f(x)$ positive and decreasing?

17. When is $f(x)$ negative and increasing?

18. When is $f(x)$ negative and decreasing?

The graph of *g*is shown here.



19. When is $g(x)$ positive and increasing?

20. When is $g(x)$ positive and decreasing?

21. When is $g(x)$ negative and increasing?

22. When is $g(x)$ negative and decreasing?