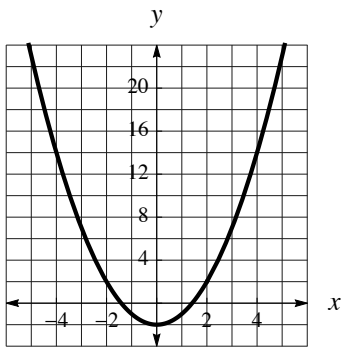


## Quiz 3: Practice Problems

First & Last Name: \_\_\_\_\_ Class: \_\_\_\_\_

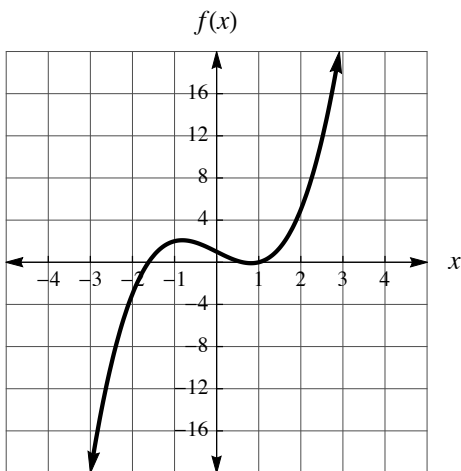
- Find the inverse of  $f(x) = -5x + 8$ . Check your work by showing  $f^{-1}(f(1)) = 1$ .  
**Honors:** Also check your work by inverting  $f^{-1}(x)$ .
- Find the inverse of  $f(x) = -x^2 + 5$  ( $x \geq 0$ ). Check your work by showing  $f(f^{-1}(-11)) = -11$ .  
**Honors:** On the same axes, sketch  $f(x)$  and  $f^{-1}(x)$ .
- Below,  $f(x) = x^2 - 2$  is graphed. Sketch a secant line that intercepts the parabola at  $x = -4$  and  $x = 3$ . What is the slope of this secant line?  
**Honors:** What is the equation of the secant line?



- Complete the following finite differences table for the function  $f(x) = x^3 - 2x + 1$ . Plot the finite differences on the graph.

$x$	-3	-2	-1	0	1	2	3
$f(x)$	-20	-3	2	1	0	5	22

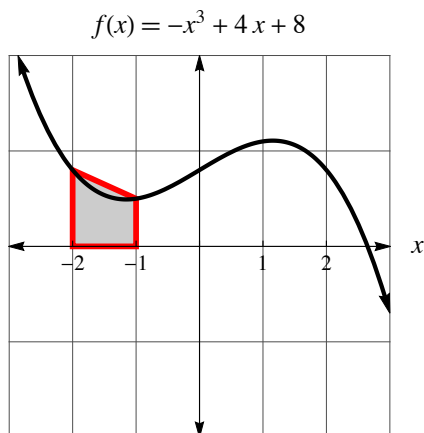
$\Delta y$						
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- Write a slope statement for the function  $f(x) = x^3 - 2x + 1$ , which is graphed in Question 4.

6. Using trapezoids, approximate the area under the curve of  $f(x) = -x^3 + 4x + 8$  for  $-2 \leq x \leq 2$ . The first trapezoid has been drawn for you. The area of a trapezoid is  $A = \frac{1}{2}(a + b)h$ .

**Honors:** What would the area approximation be if left endpoint rectangles were used instead?



7. The distance an object is from its starting point (position,  $p$ , in meters) as a function of time,  $t$  (in seconds), is given by the equation  $p(t) = 0.25t^3 - 2t^2 + 3.75t$  (also see the graph below).

i) What is the object's position at  $t = 4$  seconds?

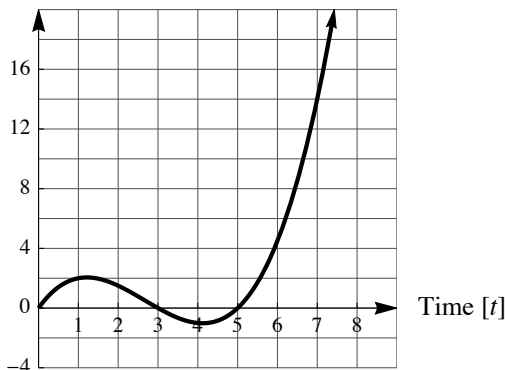
ii) What was the object's displacement between  $t = 0$  and  $t = 7$  seconds?

iii) What distance does the object travel between  $t = 0$  and  $t = 7$  seconds?

iv) What is the average velocity of the object between  $t = 0$  and  $t = 7$  seconds?

**Honors:** What is the average velocity of the object on the interval  $2 \leq t \leq 6.75$ ? Your answer should be accurate to two decimal places.

Position [ $m$ ]



### Challenge Option (required for Honors)

8. A piecewise function,  $f(x)$ , is sketched below. Sketch  $f(f(x))$  on the same graph.

