

1. Write the general equation of a quadratic in each of the following forms:

Standard Form:

Vertex Form:

Factored Form:

2. Given $y = x^2 + 2x - 3$, find the following:

a) Factored Form:

b) Vertex Form:

Find vertex form if needed then: A) Identify the vertex and axis of symmetry, B) then write a verbal expression for each equation describing the transformation from the parent function.

3. $y = -(x - 7)^2 + 3$

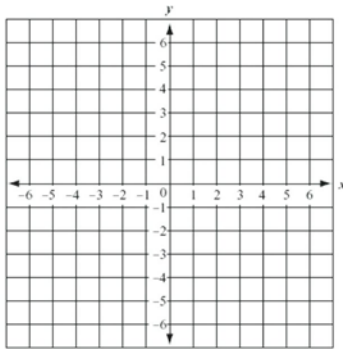
p
_____.

4. $y = x^2 - 5x + 4$.

_____.

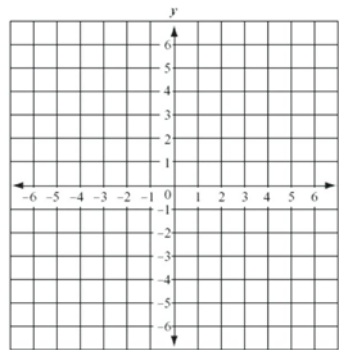
Graph the functions, and then find the parts (a-d) below:

5. $f(t) = -t^2 - 6t - 5$



- a) Vertex:
- b) Axis of Symmetry:
- c) x -intercept(s):
- d) y -intercept:

6. $f(x) = (x + 6)(x + 1)$



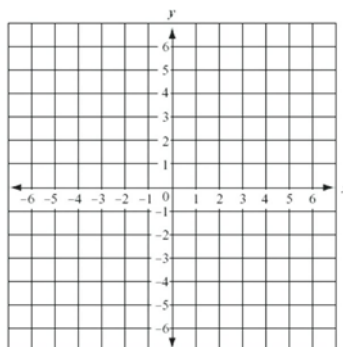
- a) Vertex:
- b) Axis of Symmetry:
- c) x -intercept(s):
- d) y -intercept:

Write the equation of a function that is described below.

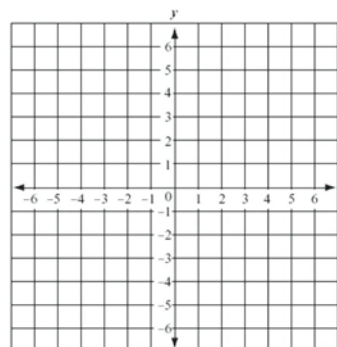
7. A quadratic function that is shifted up 5 units, shifted right 2 units and vertically compressed/shrunk by a factor of $\frac{1}{3}$.

Graph the functions and describe the transformations.

8. $y = -3(x + 3)^2 + 6$

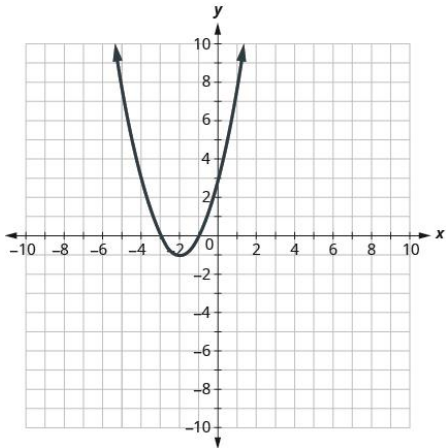


9. $y = \frac{1}{4}x^2 - 2$

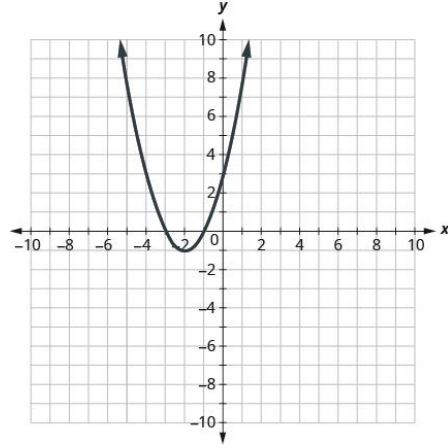


Let $h(x)$ be the function represented by the graph below.

10. Sketch the graph $-h(x - 5)$

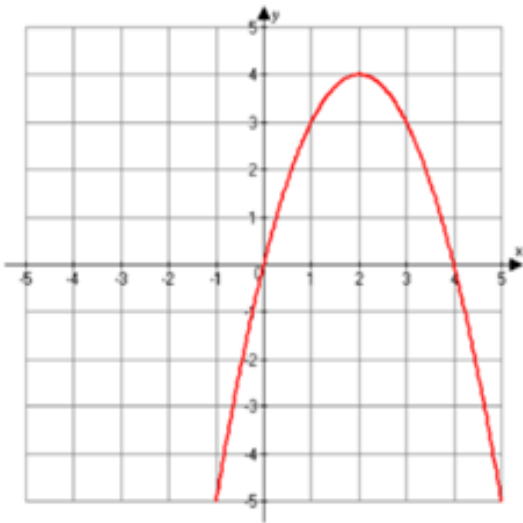


11. Sketch the graph $h(x) - 4$



12. Calculate the **average rate of change** of the function $y = 3x^2 + 6x - 8$ on the interval $[-2, 0]$

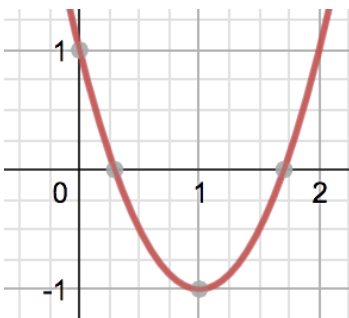
13. Using the graph below Find the following:



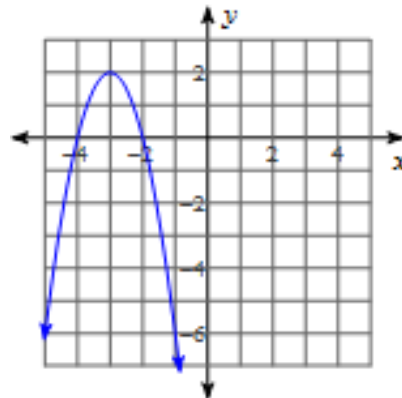
- State the vertex:
- What is the axis of symmetry:
- Is the vertex a max or min and what is the max or min:
- Find the equation of the quadratic:
- State the zeros:
- State the y-intercept:
- State the Domain:
- State the Range:
- Find $f(1)$
- Find the average rate of change on the interval $[2, 4]$

Write a quadratic equation for the given graphs.

14.



15.



Write a quadratic function whose graph satisfies the given conditions.

16. x-intercepts: -5 and $\frac{2}{3}$

17. x-intercepts: 0 and 3

18. Vertex (-1, 1) and a point (2, 4)

19. Vertex (-3, -1) and a point (-1, -9)

20. Given $f(x) = ax^2 + bx + c$. State a value for a that makes $f(x)$ opens down and wider than:
 $g(x) = 2x^2 + 5x + 3$.

Find a value for c that will make each polynomial a perfect square trinomial.

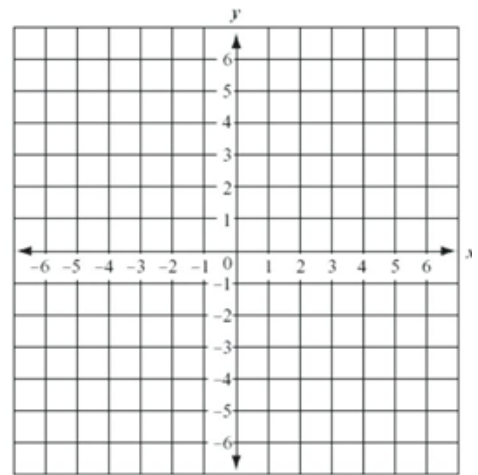
21. $x^2 + 16x + c$

22. Graph the function $f(x) = \begin{cases} 2 & \text{if } x < -2 \\ x^2 + 2 & \text{if } -2 \leq x < 1 \\ 2x - 4 & \text{if } x \geq 1 \end{cases}$

a) $f(-2) =$

b) $f(0) =$

c) $f(4) =$



23. Write a Piece wise function for the given graph.

