Name: Key

Standard 3B Review: Writing Quadratic Equations & Identifying Key Features $y=a(x-h)^2+k$

Write a quadratic function whose graph satisfies the given conditions.

1. x-intercepts: 4 and -2

$x=4$ $x=-2$

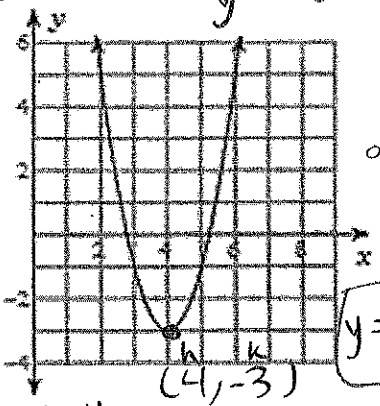
-4 -4 $+2$ $+2$

$y=(x-4)(x+2)$

$y=x^2+2x-4x-8$

$y=x^2-2x-8$

2.



out 1 up 2

so $a=2$

$y=2(x-4)^2-3$

h k

$(4,-3)$

3. x- intercepts: $-\frac{1}{4}$ *and* 3

$4x=-\frac{1}{4}\cdot 4$ $x=3$

$4x=-1$ -3 -3

$+1$ $+1$ $(x-3)$

$(4x+1)$ $y=(4x+1)(x-3)$

$y=4x^2-11x-3$

4. Vertex: $(-2,-5)$ and the point: $(2,3)$

h k x y

$3=a(2+2)^2-5$

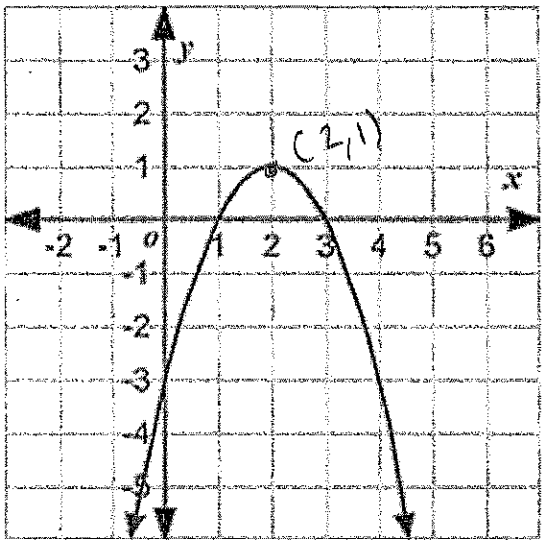
$3=16a-5$

$+5$ $+5$

$\frac{8}{16}=\frac{16a}{16}$ $a=\frac{1}{2}$

$y=\frac{1}{2}(x+2)^2-5$

Consider the graph of the function f.



5. What is the vertex? $(2,1)$

6. Is the vertex a max or min? max

7. What is the axis of symmetry $x=2$

8. Write the function f in standard or vertex form.

$a=-1$ $y=-(x-2)^2+1$

9. Find the zeros of the function.

$(1,0)$ and $(3,0)$ or 1 and 3

10. Find the domain $\mathbb{R}$ or $(-\infty,\infty)$

11. Find the range $y\leq 1$ or $(-\infty,1]$

12. Find the y intercept.

$(0,-3)$ or -3

13. Find $f(4)$

when $x=4$ $y=-3$ or -3

14. Calculate the average rate of change on the interval $[0,2]$ x's

$(0,-3)$ $\frac{y_2-y_1}{x_2-x_1}$ $\frac{-3-1}{0-2}=\frac{-4}{-2}=2$

$(2,1)$

Find the vertex and axis of symmetry of the graph of the function. v: (h,k)

15. $y=-3(x+1)^2-8$

v: $(-1,-8)$

axis of symmetry $x=-1$

16. $y=x^2-10x+16$

$h=\frac{-b}{2a}$ $h=\frac{10}{2(1)}$ $h=5$

$k=(5)^2-10(5)+16$

$k=-9$

v: $(5,-9)$

axis of symmetry $x=5$

17. Calculate the average rate of change for the function $f(x)=x^2+3x-10$ on the interval $[3,5]$.

$y=(3)^2+3(3)-10$ $y=8$ $(3,8)$

$y=(5)^2+3(5)-10$ $y=30$ $(5,-9)$

and

$\frac{8-30}{3-5}=\frac{-22}{-2}$

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