**Graphing a Quadratic Inequality in Standard Form**

***Directions:*** *Graph each quadratic by finding the axis of symmetry, vertex, two other points, and shading. Show your work for each part.*

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| 1. $y>-x^{2}$

Axis of Symmetry:\_\_\_\_\_\_\_\_\_\_\_\_\_\_*(work)*Vertex: \_\_\_\_\_\_\_\_\_\_*(work)*y-intercept: \_\_\_\_\_\_\_\_\_\_\_*(work)*Reflected Point: \_\_\_\_\_\_\_\_\_\_\_Shade: Above Below | Image result for coordinate plane |
| 1. $y\leq 3x^{2}+18x-8$

Axis of Symmetry:\_\_\_\_\_\_\_\_\_\_\_\_\_\_*(work)*Vertex: \_\_\_\_\_\_\_\_\_\_*(work)*y-intercept: \_\_\_\_\_\_\_\_\_\_\_*(work)*Reflected Point: \_\_\_\_\_\_\_\_\_\_\_Shade: Above Below | Image result for coordinate plane |

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| 1. $f\left(x\right)\geq x^{2}-6x$

Axis of Symmetry:\_\_\_\_\_\_\_\_\_\_\_\_\_\_*(work)*Vertex: \_\_\_\_\_\_\_\_\_\_*(work)*y-intercept: \_\_\_\_\_\_\_\_\_\_\_*(work)*Reflected Point: \_\_\_\_\_\_\_\_\_\_\_Shade: Above Below | Image result for coordinate plane |
| 1. $f\left(x\right)<-2x^{2}-8x-9$

Axis of Symmetry:\_\_\_\_\_\_\_\_\_\_\_\_\_\_*(work)*Vertex: \_\_\_\_\_\_\_\_\_\_*(work)*y-intercept: \_\_\_\_\_\_\_\_\_\_\_*(work)*Reflected Point: \_\_\_\_\_\_\_\_\_\_\_Shade: Above Below | Image result for coordinate plane |

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1. **A ball is thrown into the air with an initial upward velocity of 48ft/s. Its height h in feet after t seconds is given by the function**$ h=-16t^{2}+48t+4$**.**
2. In how many seconds will the ball reach its maximum height?
3. What is the balls maximum height?
4. **Suppose you have 80ft of fence to enclose a rectangular garden. The function** $A=40x-x^{2}$ **gives you the area of the garden in square feet where x is the width in feet.**
5. What width gives you the maximum gardening area?
6. What is the maximum area?
7. **An athlete dives from the 3-meter springboard. Her height y, at horizontal distance x, can be approximated by the function** $y=-1.2x^{2}+3.12x+3.$ **Both the height and distance are in meters.**
8. How far has she traveled horizontally when she reaches her maximum height? Round to the nearest tenth of a meter.
9. What is her maximum height? Round to the nearest tenth of a meter.