Kerry Ojakian's MTH 30 Class
Class Assignment #9

1. Consider the parabola $f(x) = 2x^2 + 8x + 3$. Find its axis of symmetry.

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2. Consider the parabola $f(x) = 3x^2 - 6x + 30$. Find its axis of symmetry.

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3. Write the parabola $h(x) = (x - 2)^2 + 1$ in in general form.

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4. Write the parabola $f(x) = (x + 4)^2 - 2$ in in general form.

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5. What is the domain and range of the quadratic function $f(x) = (x + 8)^2 - 9$.

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6. Write the parabola $g(x) = x^2 - x$ in vertex form.

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7. Consider the parabola $f(x) = 3x^2 - 6x + 30$. Find its axis of symmetry.

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8. What is the domain and range of the quadratic function $f(x) = (x + 8)^2 - 9$.

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9. Consider the parabola $y - 9x^2 = x$. Do *not* graph it, but do the following:

   (a) Write the equation in standard form.

   (b) Find the axis of symmetry.

   (c) Find its x- and y-intercepts.

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10. Consider $f(x) = 2x^2 + 8x + 3$.

    (a) Does f open up or down?

    (b) Find its axis of symmetry.

    (c) Find the vertex.

    (d) What are the max/min values (if any)?

    (e) Sketch a rough graph (label the vertex).

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11. Consider the parabola $y + 3x = -x^2$.

    (a) Find its intercepts.

    (b) Find the vertex.

    (c) Find a pair of points symmetric about the axis.

    (d) Graph the parabola.

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12. For the quadratic function $f(x) = (x - 4)^2 - 1$

    (a) Find its vertex

    (b) Find its x- and y-intercepts.

    (c) Give the equation of the axes of symmetry.

    (d) Draw the graph.

    (e) Determine its domain and range.

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13. For the quadratic function $g(x) = 4 - (x - 1)^2$

    (a) Find its vertex

    (b) Find its x- and y-intercepts.

    (c) Give the equation of the axes of symmetry.

    (d) Draw the graph.

    (e) Determine its domain and range.

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14. For the quadratic function $h(x) = 3x^2 - 2x - 4$

    (a) Find its vertex

    (b) Find its x- and y-intercepts.

    (c) Give the equation of the axes of symmetry.

    (d) Draw the graph.

    (e) Determine its domain and range.

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15. The number of people (P) infected t days after a flu outbreak is modeled by $P = -t^2 + 100t + 20$.

    (a) How many days after outbreak is the maximum number sick?

    (b) What is that maximum number of people infected at once?

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16. A patient's body temperature T (in Fahrenheit) x hours after acetaminophen is $T = 0.4x^2 - 2.6x + 103$.

    (a) When will the temperature be minimum?

    (b) What is that minimum temperature?
