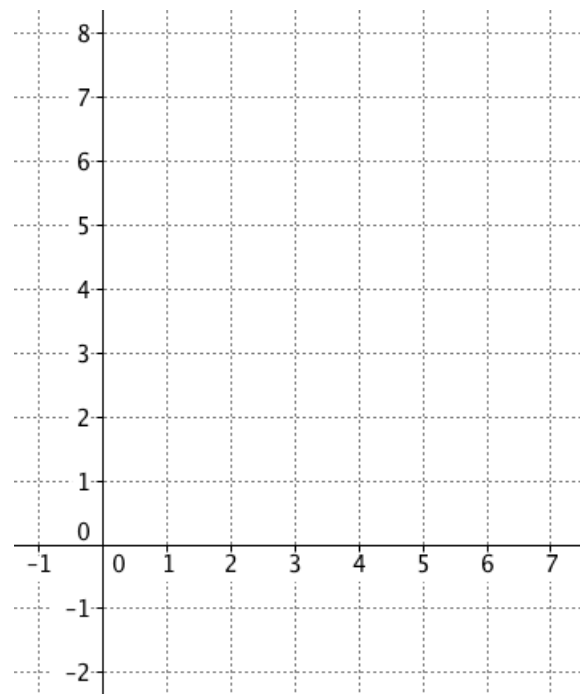


MPM2D – Unit 4: The Quadratic Equation

Review Worksheet – Part 1

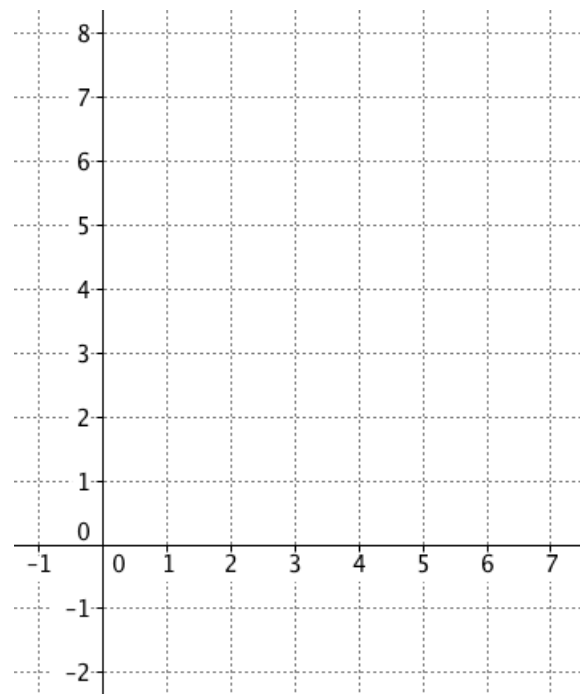
Section 1 – Completing the square and determining the vertex of a parabola

1. Convert $y = -2x^2 + 12x - 11$ into vertex form by completing the square. Then graph the parabola by plotting the vertex and following the step pattern.



Section 2 – Solving by opposite operations and determining x-intercepts

1. Determine the x-intercepts of the quadratic relation $y = -0.8(x - 2.5)^2 + 6$.
Sketch the parabola and label the coordinates of the vertex and x-intercepts.



Section 3 – Determining the vertex and x-intercepts of a parabola

1. Determine the vertex and x-intercepts of $y = 3x^2 - 30x + 71$ by completing the square, setting y equal to zero, and then solving by opposite operations.

2. Determine the vertex and x-intercepts of $y = -0.8x^2 + 13x + 21$ using the quadratic formula.

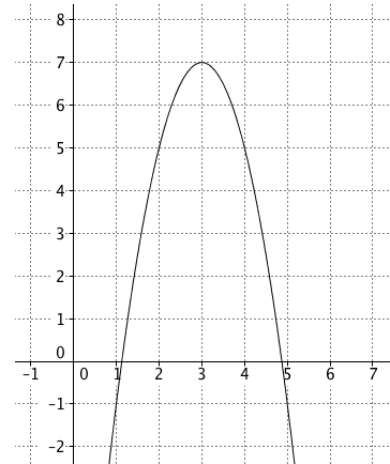
3. Determine the vertex and x-intercepts of $y = 6x^2 + 21x - 90$ by factoring.

4. Complete questions # 15, 16, 17, 19 on page 321.

Answers:

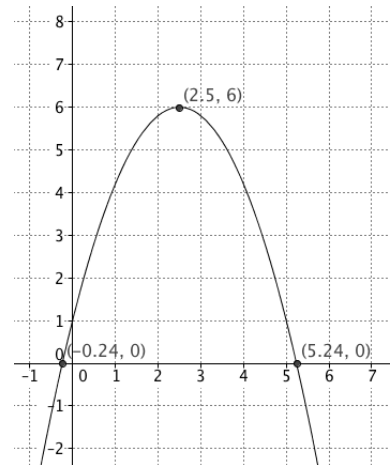
Section 1 – Completing the square and determining the vertex of a parabola

1. The quadratic relation in vertex form is $y = -2(x - 3)^2 + 7$. We can plot the vertex, the “over 1 points” and the “over 2 points:”



Section 2 – Solving by opposite operations and determining x-intercepts

1. The x-intercepts are $(-0.24, 0)$ and $(5.24, 0)$ as shown on the following sketch



Section 3 – Determining the vertex and x-intercepts of a parabola

1. After completing the square $y = 3(x - 5)^2 - 4$ so the vertex is $(5, -4)$.
After setting $y = 0$ and solving by opposite operations $x = 6.15$ and $x = 3.85$.
2. The vertex is $(8.125, 73.81)$ and the x-intercepts are $(-1.48, 0)$ and $(17.73, 0)$.
3. The vertex is $(-1.75, -108.375)$ and the x-intercepts are $(2.5, 0)$ and $(-6, 0)$.