ALGEBRA II REVIEW PROBLEMS
(Chapter 5)

1. Graph the following parabolas; state the vertex and axis of symmetry:

a. $y = 2x^2 + 8x - 3$ **b.** $y = -(x - 2)^2 + 1$

2. Write the equation of a parabola with vertex (-3, 6) and containing the point (1, -2).

3. Solve by factoring or taking square roots:

a. $x^2 - 7x = 0$ **b.** $x^2 + 2x - 8 = 0$ **c.** $(x + 3)^2 = 9$

d. $4x^2 - 12x + 9 = 0$ **e.** $x^2 - 9 = 0$ **f.** $4x^2 + 3 = -8x$

4. Simplify the following:

a. $\sqrt{-24}$ **b.** $(4 - i) + (5 - 9i)$ **c.** $(6 - 3i)^2$

5. Solve by completing the square; simplify any radicals (NO DECIMALS):

a. $x^2 - 2x + 4 = 0$ **b.** $4x^2 - x - 3 = 0$

6. Rewrite $y = x^2 + 3x - 1$ into vertex form.

7. Use the discriminate to determine the number and type of solutions for each equation; DO NOT SOLVE:

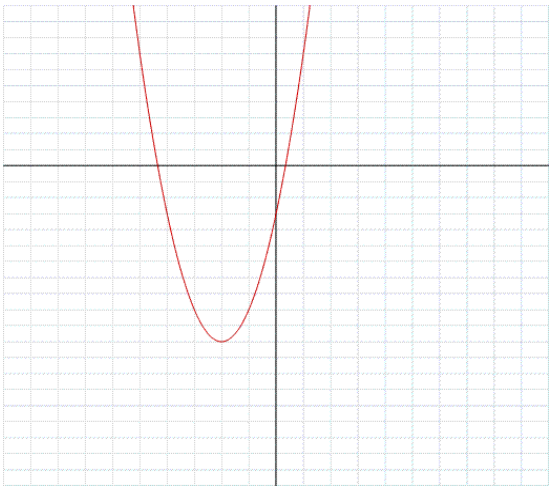
a. $x^2 - 6x + 2 = 0$ **b.** $-2x^2 + 7x = 10$

8. Solve using the quadratic formula; simplify any radicals (NO DECIMALS):

a. $3x^2 - 21x + 3 = 0$ **b.** $5x^2 + x + 2 = 0$

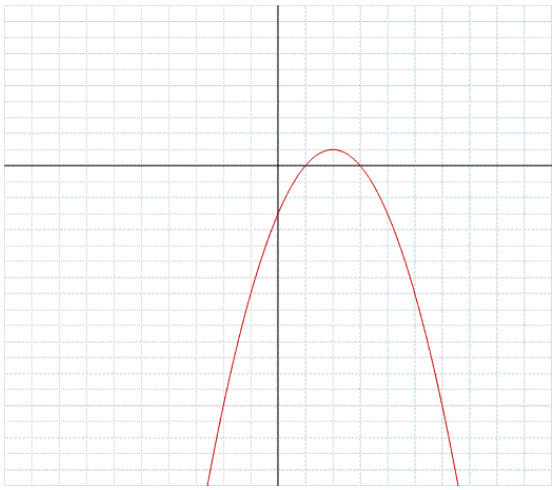
ANSWERS

1a.



Vertex (– 2 , – 11); Axis of symmetry: $x = -2$

1b.



Vertex (2, 1); Axis of symmetry: $x = 2$

2. $y = -\frac{1}{2}(x+3)^2 + 6$

3a. $x = 0, 7$

3b. $x = 2, -4$

3c. $x = 0, -6$

3d. $x = \frac{3}{2}$

3e. $x = 3, -3$

3f. $x = -\frac{1}{2}, -\frac{3}{2}$

4a. $2i\sqrt{6}$

4b. $9 - 10i$

4c. $27 - 36i$

5a. $(x-1)^2 = -3$

$x = 1 \pm i\sqrt{3}$

5b. $\left(x - \frac{1}{8}\right)^2 = \frac{49}{64}$

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

6. $y = \left(x + \frac{3}{2}\right)^2 - \frac{13}{4}$

7a. Discriminate = 28; 2 real solutions

7b. Discriminate = -31; 2 imaginary solutions

8a. $x = \frac{7 + 3\sqrt{5}}{2}$, $\frac{7 - 3\sqrt{5}}{2}$

8b. $x = \frac{-1 + i\sqrt{39}}{10}$, $\frac{-1 - i\sqrt{39}}{10}$