Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **Chapter 9 Solving Quadratics Review**

**Solving Quadratics**

1. Solve for all roots in the following equations:
	1. $3x²-2x=16$
	2. $3x²-27=0$
2. If the zeros of the function are $x=-2$ and $x=7$
	1. Write the factors of the function.
	2. Write the function in standard form.
3. Graph each equation below and determine how many real solutions each one has. Explain how you know.
	1. $y=x²-4x+2$ b. $y=-x^{2}+2x-3$ c. $y=4x²+4x+1$
4. Solve for x ***and*** determine if the solution(s) are rational or irrational. Justify your answer.

$$\left(x-2\right)^{2}=11$$

**Systems of Equations**

1. Graph $h\left(x\right)=\frac{1}{2}\left|x\right|$ and $j\left(x\right)=-x^{2}+3$ on the grid below. Does $h\left(-4\right)=j(-4)$? Use your graph to explain your answer.



1. A company is considering building a manufacturing plant. They determine the weekly production cost at site A to be $A\left(x\right)=2x^{2}$ while the production cost at site B is $B\left(x\right)=4x+6$, where $x$ represents the number of products, *in hundreds*, and $A(x)$ and $B(x)$ are the production costs, *in hundreds of dollars*.

Graph the production cost functions on the set of axes below and label them Site A and Site B.

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State the positive value(s) of $x$ for which the production costs at the two sites are equal. Explain how your determined your answer.

**Review**

1. When you look at a graph, how do you know where the solutions are? (Are there specific x or y values?)
2. The function $f\left(x\right)=-5x^{2}+80$ represents the height, $f(x)$, in feet of an object from the ground at $x$ seconds after it is dropped. Determine a realistic domain for the function.
3. Write the following function in vertex form by completing the square. $y=-x^{2}+6x+2$
4. Factor the following quadratic expression completely. $x^{4}-5x^{2}+4$
5. The table below shows the average diameter of a pupil in a person’s eye as he or she grows older.



What is the average rate of change, in millimeters per year, of a person’s pupil diameter from age 20 to age 80?

1. Solve the equation below for *x* in terms of *a*. $4\left(ax+3\right)-3ax=25+3a$