



# BHS COURSE COMPARISON GUIDE

## ALGEBRA I & HONORS ALGEBRA I

Math

### Course Descriptions

**Algebra I:** focuses on families of functions, including linear, quadratic, polynomial, radical, and exponential. Functions are represented using verbal descriptions, equations, tables, and graphs, and they are used to model real-world situations in order to solve problems. A TI-83/84 graphing calculator is required.

**Honors Algebra I:** examines the topics of Algebra I in greater depth and at a faster pace. Intended for the very capable, interested and motivated mathematics student, the course addresses additional topics such as piecewise functions and transformations. A TI-83/84 calculator is required.

### Algebra I students who traditionally perform well in the class...

- ◆ invest 20-30 minutes per night completing homework and/ or reviewing course materials
- ◆ arrive each day to class prepared (books, handouts, supplies, etc.) with homework and night assignments completed
- ◆ check and compare answers in the back of the textbook before the next class
- ◆ take an active approach to the learning process and accept responsibility for the roll they have in developing critical thinking skills

### Honors Algebra I students who traditionally perform well are also committed to...

- ◆ an additional 10-15 minutes of nightly homework, review and preparation for the following academic day
- ◆ a faster pace and greater depth of knowledge
- ◆ a higher level of course content understanding through additional steps/ processes to arrive at the correct answer
- ◆ regularly checking worked-out solutions online and working independently to correct errors
- ◆ thinking independently and having confidence to tackle non-routine problems

### From a student's perspective...

*'The first quarter of Honors is difficult because of the adjustments you have to make in your study habits. Just because math came easily to you in the past doesn't mean you won't have to put in time and effort. It will be a challenge, but if you are up for it, you will look back and be amazed at what you accomplished and how it pays off the following year.'* - Bexley Student (Sophomore)

# SAMPLE PROBLEMS

## Algebra I

Solve for x.

$$2(x+3)^2 - 4 = 2$$

$$\begin{array}{r} +4 \\ +4 \end{array}$$

$$\frac{2(x+3)^2}{2} = \frac{6}{2}$$

$$\sqrt{(x+3)^2} = \sqrt{3}$$

$$\begin{array}{r} x+3 \\ -3 \\ -3 \end{array} = \begin{array}{r} \pm\sqrt{3} \\ -3 \\ -3 \end{array}$$

$$x = -3 \pm \sqrt{3}$$

Find the value of k so that the line through the points  $(x_1, y_1)$  and  $(x_2, y_2)$  has a slope of  $-2$ .

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\frac{-2}{1} = \frac{7 - (-3)}{k - 2}$$

$$\frac{-2}{1} = \frac{10}{k-2}$$

$$\begin{array}{r} -2k + 4 \\ -4 \\ -4 \end{array} = 10$$

$$-2k = 6$$

$$k = -3$$

## Honors Algebra I

Solve for x.

$$\frac{2(x+3)^2}{2} \left(-\frac{4}{2}\right) = \left(-\frac{1}{2}\right)$$

$$\begin{array}{r} +4 \\ +4 \end{array}$$

$$\frac{6(x+3)^2}{6} = \frac{3}{6}$$

$$\frac{6(x+3)^2}{6} = \frac{7}{6}$$

$$\sqrt{(x+3)^2} = \sqrt{\frac{7}{6}}$$

$$x+3 = \pm \frac{\sqrt{7}}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}}$$

$$\begin{array}{r} x+3 \\ -3 \\ -3 \end{array} = \begin{array}{r} \pm \frac{\sqrt{42}}{6} \\ -3 \\ -3 \end{array}$$

$$x = -3 \pm \frac{\sqrt{42}}{6}$$

Find the value of k if the line through the points  $(x_1, y_1)$  and  $(x_2, y_2)$  is perpendicular to the line through the points  $(x_3, y_3)$  and  $(x_4, y_4)$ .

$$m = \frac{5 - 2}{1 - 1} = \frac{3}{0} \text{ m is undefined}$$

$$m_{\perp} = 0$$

$$0 = \frac{-8k + 1 - (k + 2)}{k - 7 - (3k + 4)}$$

$$0 = \frac{-8k + 1 - k - 2}{k - 7 - 3k - 4}$$

$$\frac{0}{1} = \frac{-9k - 1}{-2k - 11}$$

$$\begin{array}{r} -9k - 1 \\ +1 \\ +1 \end{array} = 0$$

$$-9k = 1$$

$$k = -\frac{1}{9}$$