

**Sample Vocabulary Notecards**  
 (updated: 12/10/2024)

Learning vocabulary is an essential component of proficiency in the course material. “Vocabulary” means terminology (including notation) and facts. The most effective way to learn vocabulary is to make a notecard for each vocabulary item. You can use physical cards, like 3 by 5 inch index cards, or you can use some equivalent electronic medium.

A complete notecard must include: a name that labels the term or fact; the definition of the term or statement of the fact; and at least one example illustrating the definition or fact. Here are some examples.

| <b>FRONT of card, or LEFT column of list:</b><br><i>term or fact name</i> | <b>BACK of card, or RIGHT column:</b><br><i>definition, statement, example(s)</i>                                                                                                                                                                                                                                                                                                                                          |
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| quadratic polynomial                                                      | <p>A <b>quadratic polynomial</b> is an expression of the form <math>ax^2 + bx + c</math>, where <math>x</math> is a variable and <math>a, b, c</math> are constants.</p> <p>Example: <math>2x^2 - 3x + 7</math> is a quadratic polynomial with <math>a = 2</math>, <math>b = -3</math>, <math>c = 7</math>.</p>                                                                                                            |
| quadratic formula                                                         | <p><b>The quadratic formula</b></p> <p>If <math>ax^2 + bx + c = 0</math> and <math>a \neq 0</math> then</p> $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.$ <p>If <math>b^2 - 4ac &lt; 0</math>, then there are no real solutions.</p> <p>Example:</p> <p>For <math>x^2 + 2x - 3 = 0</math>, use <math>a = 1</math>, <math>b = 2</math>, <math>c = -3</math> to get</p> $x = \frac{-2 \pm \sqrt{4 + 12}}{2} = -1 \pm 2 = -3, 1.$ |

| <b>FRONT of card, or LEFT column of list:</b><br><i>term, formula or fact name</i> | <b>BACK of card, or RIGHT column:</b><br><i>definition, statement, example(s)</i>                                                                                                                                                                                                                                                                                                  |
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| arithmetic sequence                                                                | <p>A sequence is <b><i>arithmetic</i></b> if there is a fixed constant <math>d</math> so that each term in the sequence is equal to the previous term plus <math>d</math>. (Note: in this usage, “arithmetic” is an adjective, pronounced a-rith-met’-ic, with the stress on the third syllable.)</p> <p>Example with <math>d = 4</math><br/> <math>3, 7, 11, 15, \dots</math></p> |
| geometric sequence                                                                 | <p>A sequence is <b><i>geometric</i></b> if there is a fixed constant <math>r</math> so that each term in the sequence is equal to the previous term times <math>r</math>.</p> <p>Example with <math>r = -2</math><br/> <math>1, -2, 4, -8, 16, \dots</math></p>                                                                                                                   |