**Transforming Parent Functions**

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| **1**. | Write the equation for the graph of function *g*(*x*), obtained by shifting the graph of *f* (*x*) = *x*² three units left, stretching the graph vertically by a factor of two, reflecting that result over the *x*-axis, and then translating the graph up four units.  |
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| **2**. | Describe the transformations that would produce the graph of the second function from the graph of the first function.

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| http://www.regentsprep.org/Regents/math/algtrig/ATP9/laptopthink.gif | http://www.regentsprep.org/Regents/math/algtrig/ATP9/funcpr30.gif  |

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| **3**. | Given the graph of the function ***f* (*x*)** shown below, sketch the graphs of:

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| *a.*  *f* (*x* + 1) *b*. *f* (*x*) - 2*c.* *f* (-*x*)*d.* -*f* (*x*)*e.* 2 *f* (*x*) | http://www.regentsprep.org/Regents/math/algtrig/ATP9/bluegraph.gif |

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| **4**. | A function is an **odd function** when *f* (*-x*) = *-f* (*x*).  Graphs of odd functions are symmetric with respect to the origin.A function is an **even function** when *f* (*-x*) = *f* (*x*).  Graphs of even functions are symmetric with respect to the *y*-axis. Determine if the functions *f* (*x)* and *g*(*x*) shown below are odd, even or neither:                               http://www.regentsprep.org/Regents/math/algtrig/ATP9/funcpr1.gif            http://www.regentsprep.org/Regents/math/algtrig/ATP9/funcpr2.gif    |

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| **5**. | A function is defined as http://www.regentsprep.org/Regents/math/algtrig/ATP9/funcpr9.gifSketch the graph of *f* (*x*) and *f -1* (*x*) on the same axis and describe in transformational terms the relationship between these two graphs. |
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| **6**. | Let ***x*** represent the length of a side of a square and an edge of a cube. a.  Graph the area of the square as a function of ***x***. b.  On the same axes, graph the surface area of the cube as a function of ***x***. c.  Describe the relationship between these two graphs using transformational     terms. | http://www.regentsprep.org/Regents/math/algtrig/ATP9/cubes.gif |
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| **7**. |   Write the equation for the graph shown at the right.  Assume that the parent function was http://www.regentsprep.org/Regents/math/algtrig/ATP9/funcpr3.gif. http://www.regentsprep.org/Regents/math/algtrig/ATP9/crocodile2.gif | http://www.regentsprep.org/Regents/math/algtrig/ATP9/graphp4.gif |
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| **8**. | Consider the relationship between Fahrenheit and Celsius temperatures.  Using your graphing calculator, graph these two functions on the same set of axes:                      http://www.regentsprep.org/Regents/math/algtrig/ATP9/funcpr4.gif**a.**  Describe in transformational terms, how the first graph becomes the second graph. **b.**  At what temperature are the Fahrenheit and Celsius readings the same? | http://www.regentsprep.org/Regents/math/algtrig/ATP9/tempguy.gif |
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