**Transforming Parent Functions**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | **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. | |  |  | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  | | --- | --- | --- | --- | | **2**. | Describe the transformations that would produce the graph of the second function from the graph of the first function.   |  |  | | --- | --- | | http://www.regentsprep.org/Regents/math/algtrig/ATP9/laptopthink.gif | http://www.regentsprep.org/Regents/math/algtrig/ATP9/funcpr30.gif | | |  |  | |

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

|  |  |  |  |
| --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | |  |  | | --- | --- | | **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 | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | **5**. | A function is defined as  http://www.regentsprep.org/Regents/math/algtrig/ATP9/funcpr9.gif Sketch the graph of *f* (*x*) and *f -1* (*x*) on the same axis and describe in transformational terms the relationship between these two graphs. | |  |  | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | | **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 | |  |  | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | | **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 | |  |  | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | | **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 | |  |  | | | |