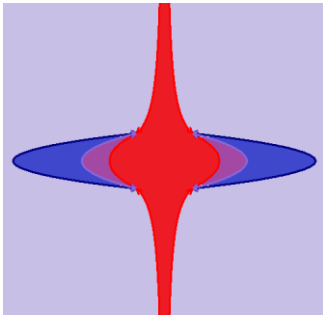


# TASK: Functions in Design

Due Date: \_\_\_\_\_



CD Covers and T-shirts often use graphics in their designs. Many of these designs can be defined by mathematical functions.

1. Plot the graphic design defined by the following set of functions where  $x \in R$ . Use the graphing calculator to verify the functions but plot them on graph paper under the restricted domain given.

*Alternate Presentation: Use a graphing program online or Geometer's Sketchpad*

- $y = \frac{4}{x}, -2 \leq x \leq -0.1, 0.1 \leq x \leq 2$
- $y = -\frac{4}{x}, -2 \leq x \leq 2$
- $y = \sqrt{6-x}, x \geq 2$
- $y = -\sqrt{6-x}, x \geq 2$
- $y = \frac{2}{3}\sqrt{11-x}, x \geq 2$
- $y = -\frac{2}{3}\sqrt{11-x}, x \geq 2$
- $y = \sqrt{2(4-x)}, x \geq 2$
- $y = -\sqrt{2(4-x)}, x \geq 2$
- $y = \sqrt{x+6}, x \leq -2$
- $y = -\sqrt{x+6}, x \leq -2$
- $y = \frac{2}{3}\sqrt{x+11}, x \leq -2$
- $y = -\frac{2}{3}\sqrt{x+11}, x \leq -2$
- $y = \sqrt{2(x+4)}, x \leq -2$
- $y = -\sqrt{2(x+4)}, x \leq -2$

2. Explain the significance of  $x = 2$ .

3. Create and draw your own graphic design using transformations of 2 or more types of functions. ( $y = \frac{1}{x}, y = \sqrt{x}, y = x^2, y = x^3$ ). You may also use transformations of other functions in your design. List the functions you decide to use as well as their domains.



<p><b>LEVEL 1 Solution</b></p> <ul style="list-style-type: none"> <li>• Only given design is completed (with minimal errors)</li> </ul>	<p><b>Level 2 Solution</b></p> <ul style="list-style-type: none"> <li>• Given design is completed</li> <li>• Minimum requirements of Level 3 solution missing components or incorrect</li> </ul>
<p><b>LEVEL 3 Solution: Your design must include</b></p> <ul style="list-style-type: none"> <li>• Given design completed</li> <li>• At least 2 types of functions</li> <li>• At least 8 equations in design</li> <li>• At least 2 types of transformations (e.g. translations, reflections, stretches/compressions)</li> <li>• A list of the equations/functions used with their domain</li> </ul>	<p><b>Level 4 Solution (Optional Design Components)</b></p> <ul style="list-style-type: none"> <li>• Minimum design components met (Level 3)</li> <li>• Colour and/or texture</li> <li>• 10 or more transformations in design</li> <li>• More than 2 types of transformations</li> </ul>

**This is an INDEPENDENT Assignment. You may work with a partner to support each other's efforts. However, each student must submit their own design.**