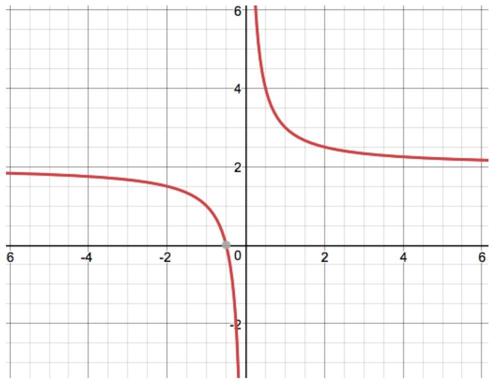
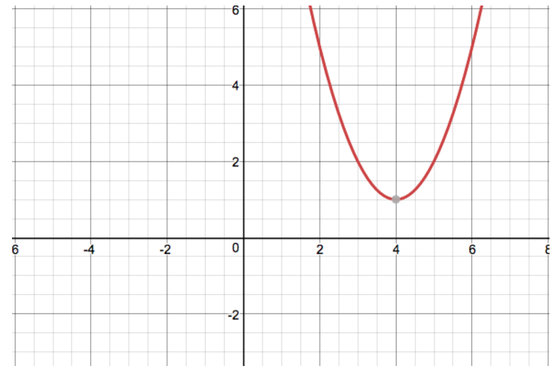
PCFU- Shifting Functions A4-A6 Name: ___________________________________

1. Identify the parent function and explain how it has been shifted: Solutions are in text boxes below.

a.



b.



Parent function: $y = \frac{1}{x}$. The function is rational because it has vertical and horizontal asymptotes.

Shifted: This function has been shifted up 2, because the horizontal asymptote is now at y = 2.

Parent function: $y = x^2$. The function is quadratic because it is shaped like a "U."

Shifted: This function has been shifted right 4 and up 1, because the vertex is now at (4, 1).

2. Write an equation for a quadratic function that has been shifted 8 left and 5 down.

The form of a quadratic function that has been shifted to a vertex of (h, k) is $y = a(x - h)^2 + k$. If we shift a quadratic left 8 and down 5, its vertex becomes (-8, 5) and a possible equation is $\boldsymbol{y = (x + 8)^2 - 5}$. Any other leading coefficient (a) would be acceptable, as well.

3. Write an equation for a sine function that has been shifted 2 right and 6 up.

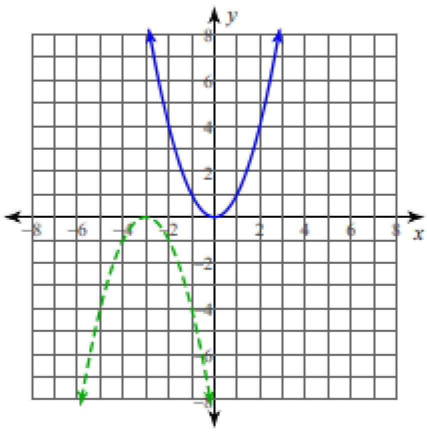
The form of a sine function that has been shifted is $y = a\sin(x - h) + k$, where h represents a horizontal shift and k represents a vertical shift. If we shift a sine function right 2 and up 6, a possible equation is $\boldsymbol{y = sin(x - 2) + 6}$. Any other leading coefficient (a) would be acceptable, as well.

Additional Practice on the back:

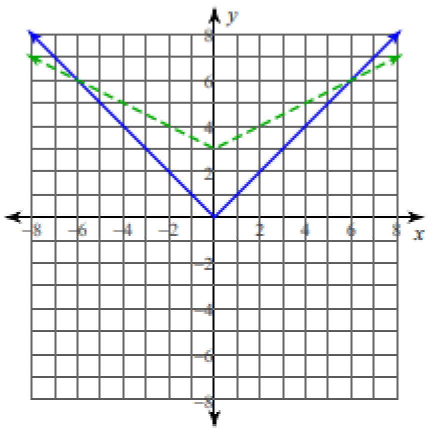
Show all of your work and explain your solutions.

Describe the transformations necessary to transform the graph of $f(x)$ (solid line) into that of $g(x)$ (dashed line).

1)



2)



Transform the given function *f*(*x*) as described and write the resulting function as an equation.

3) Use assignment A4: Shifty Behavior to write the general form for any parent function that has been shifted.

4) $f(x) = x^2$ stretched vertically by a factor of 4 and shifted down 3 units

5) $f(x) = \frac{1}{x}$ shifted left 3 units

6) $f(x) = |x|$ shifted right 1 unit and up 3 units

7) $f(x) = \sqrt{x}$ reflected over the x-axis and shifted right 2 units and down 3 units