Parent Functions

1. Identify each parent function and write its equation.

Transformations

2. Explain how each function differs from the graph of $f(x)$.
   
   a) $f(x + 3) - 4$
   b) $-f(x)$
   c) $2f(x)$

Domain/Range

3. Find the domain and range of the following functions and write in interval notation.

   a) $f(x) = x^2 - 5$
   b) $f(x) = -\sqrt{x - 1}$
   c) $f(x) = 3\sin x$
X and Y intercepts

4. For each function, find the x and y intercepts by hand.
   a) \( f(x) = 2x - 5 \)  
   b) \( f(x) = x^2 + x - 2 \)

5. Use your graphing calculator to find the x intercept(s) of the following functions. Round to 3 decimal places.
   a) \( f(x) = x^3 - 2x - 5 \)  
   b) \( f(x) = x^4 - 3x^3 + 2 \)

Intersections

6. For each pair of functions, find the point(s) of intersection by hand.
   a) \( x + y = 8 \)  
      \( 4x - y = 7 \)  
   b) \( x^2 + y = 6 \)  
      \( x + y = 4 \)

7. Find the point(s) of intersection using your calculator. Round to 3 decimal places.
   \( y = \sin x \)  
   \( 2x - y = 6 \)