

**Math 130****Worksheet for 2.7 and 2.8**

Let  $f(x) = 2x^4 - 20$  and  $g(x) = \sqrt{x}$

1. Compute  $f \circ g(x)$  and determine its domain.

2. Compute  $g \circ f(x)$  and determine its domain. Is this the same as #1?

3. Decompose  $h(x) = (3\sqrt{2x-4} + 5)^4$  into simpler functions  $f$  and  $g$  so that  $h = f \circ g$ .

4.  $f(x) = \sqrt{3-x}$  What's  $f \circ f(x)$ ?  $f \circ f \circ f(x)$ ? What happens if  $x = 1$  and you keep applying  $f$ ?

5. Find the inverses of these functions, if possible.

a)  $f(x) = 2x - 5$

b)  $g(x) = \frac{3x-2}{x+1}$

c)  $h(x) = 2x^2 - 20$

d)  $h(x) = 2x^2 - 20$  with domain  $(-\infty, -\sqrt{10}]$

e)  $h(x) = 2x^2 - 20$  with domain  $[\sqrt{10}, \infty)$

6. Sketch a graph of the inverse of  $f(x)$ , given its graph below.

