Exam 2 Practice Problems

1. Sketch the graphs of
   (a) $-\sqrt{2-x}$
   (b) $-|2-x|$
   (c) $\sqrt{1-(1+x)^2}+2$

2. We have an equilateral trangle with sides of length $2s$ What is the height of the triangle in terms of s?
   What is the area of the triangle in terms of s?

3. $f(x)=\frac{2x^3-7}{3x^3+24}$
   Find the domain and range of f. What is $f(2)$? $f(x+2)$?

4. Find a function that gives the distance between the graph $y=x^2$ and the point $(1,2)$ as a function of a single variable.

5. $f(x)=3x^3+4x^2-x+4$
   (a) Is f increasing or decreasing on average from -1 to 0? How about -1 to 2?
   (b) Compute $\frac{f(x+h)-f(x)}{h}$
   (c) Bonus: if we set $h=0$ in our answer to b), how does this relate to the function f?

6. My burgeoning cookie empire made \$500 in September and \$675 in October. Make a linear model based on this to guess how much I will make in December. If I actually make \$900 in December, what is the percent error of our model?

7. $h(t)=(t-3)^3+2$. Find $h^{-1}(t)$. Then write the domain and range of h and h^{-1} in interval notation.

8. $g(x)=\sqrt{x-3}\qquad f(x)=x-7$
   (a) find $fg(x)$
   (b) find $(g\circ f)(x)$
   (c) What is the domain and range of $g\circ f$?

9. Sketch the graph of

$$A(x)=\begin{cases}x^3 & \text{if } -2\le x\le -1\\ x^2 & \text{if } x>1\end{cases}$$

   What is A's domain and range?