Exam 1

Prob.	1	2	3	4	5	6	7	8	9	10	11	12	EC	
Value	6	8	6	8	7	15	8	4	10	10	10	8	4	100
Points														

1. Use your calculator to evaluate the following expressions.
   Give at least three correct significant digits.

   (a) $\dfrac{5-\pi}{\pi-4}$

   (b) $\dfrac{12-(1.7)3^{\frac{7}{2}}}{\sqrt{6.4^3-2.1^2}}$

   (c) $\dfrac{6+\sqrt{8^2+24}}{15(2)}$

2. Let $a=-2.7$, $b=3$, and $c=5$. Evaluate the
   following to at least three correct significant digits.

   (a) $\dfrac{a^c+b}{b-a}$

   (b) $\dfrac{c+\sqrt{c^2-a^2}}{c}$

3. True or False, (circle one).

   (a) (T) (F) For $x>0$, $\sqrt{x^2+9}=x+3$.

   (b) (T) (F) If a function is 1-1, then its inverse is also 1-1.

   (c) (T) (F) $x^2=c$ iff $x=\sqrt{c}$.

4. Short answer.

   (a) Give the natural domain of $f(x) = \sqrt{x+6}$.

   (b) If $f(x) = 3x + 1$, give $f^{-1}(x)$.

   (c) What condition must a function have so that an inverse function will exist?

   (d) If $f(4) = 7$, give a point on the graph of f^{-1}.

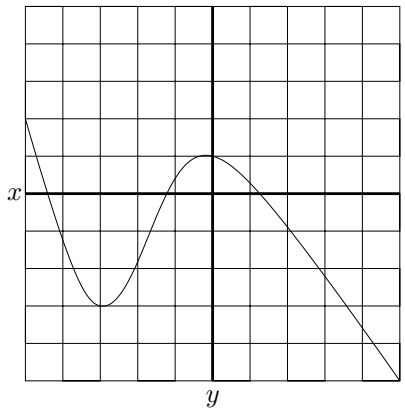
5. (a) Let $f(x) = (5+x)^2$. Find simpler functions, g and h, such that $f(x) = g(h(x))$.

   (b) Let $k(x) = x(x+16)^2$. Give $k(x+c)$.

6. For each of the the following equations, choose the BEST method for solving the equation. Choose Guess and Check if and only if no other method will work. Do not solve.

   (a) $x^2 + \sqrt{x} + 4 = 0$.
   (b) $3(\frac{x}{2} + 5) = 17$.
   (c) $(4x+7)^2 + 3(x+2) = 6$.
   (d) $(4x+1)^2(x+7) + (4x-1)(x+5)^2 = 0$.
   (e) $(4x+1)^2(x+7) + (4x-1)(x+7)^2 = 0$.

7. Here is a representative graph of f. The grid lines are one unit apart.



   (a) Find $f(3)$.

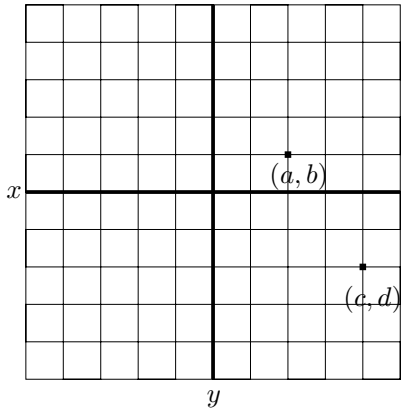
   (b) Solve for x: $f(x) = -1$.

8. Given the fact that $1 + 3 + 5 + 7 + ... + (2n - 1) = n^2$, evaluate $1 + 3 + 5 + 7 + ... + 107$.

9. Find $f^{-1}(x)$ if $f(x) = \dfrac{7}{5 - x}$.

10. Let $f(x) = x^2 + 3x$. Simplify $\dfrac{f(x+h) - f(x)}{h}$.

11. The figure gives the location of the points (a, b) and (c, d) on a square scale. Sketch the location of the points $P = (c, b)$ and $Q = (a, -d)$.



12. Let $f(x) = x^2 + 3$. Solve for x:
$3f(x) = f(4)f(-1)$.

13. (Extra Credit @ 4 point): Use the theorem in problem #8 to evaluate $79 + 81 + 83 + ... + 197$.