Homework 2

Problem 1

(1+1+1+1+3+3 points)

a) $-3x + 2y = 2$

b) $x = 1$

c) $(x + 2)^2 = 2(2y + 1)$

d) $(x + 2)^2 + (y - 3)^2 = 6$

e) For each of the examples above, determine whether it is the graph of a function $y = f(x)$. If so, find $f(x)$, its domain, and its range.

f) For each of the examples above, determine whether it is the graph of a function $x = g(y)$. If so, find $g(y)$, its domain, and its range.

Problem 2

(10 points)
Let $f(x) = 2^{x/2}$. Find the inverse function of f, denoted f^{-1}, and state domain and range of f and f^{-1}.
Note that f^{-1} is common symbolic notation for the inverse function. It does, however, **not** denote the function $1/f(x)$!

Problem 3

(2+2+2+2+2 points)
Compute following limits

a) $\lim_{x\to 1} x^2 + 2\,x - 2$

b) $\lim_{s\to 0} \frac{s^3}{s}$

c) $\lim_{t\to 4} \frac{t^2-16}{t-4}$

d) $\lim_{v\to 2} \dfrac{2 - v}{\frac{1}{2} - \frac{1}{v}}$

e) $\lim_{y\to 0} \frac{\sqrt{2-y}-\sqrt{2+y}}{-4y}$