MATH 06 ALGEBRA AND TRIGONOMETRY. SPRING 2014

1. (40 points) Simplify the following expressions involving radicals:
   (a) $4\sqrt{20}$
   (b) $8\sqrt{2}+3\sqrt{8}-\sqrt{200}$
   (c) $(49m^6n^4)^{1/2}$
   (d) $\sqrt{27m^6n^4}$
   (e) $\sqrt{27m^7n^3}$
   (f) $(x^4y^8)^{3/4}$
   (g) $\sqrt[3]{64x^6y^9}$
   (h) $(\frac{3x^{-1}y^3}{2x^{-2}y})^2$
   (i) $(2+3\sqrt{3})(2-\sqrt{3})$
   (j) $\frac{1+3\sqrt{3}}{2-\sqrt{3}}$

2. (20 points) Solve the following equations:
   (a) $3x^2+2x-5=0$
   (b) $x^2-2x-2=0$

3. (20 points) Solve the equations with radicals. Make sure to check all your answers.
   (a) $\sqrt{2-3x}=\sqrt{x+6}$
   (b) $\sqrt{3x+3}-1=x$

4. (20 points) Given the quadratic function:

$$f(x)=4x^2+8x-12$$

   (a) Find the y-intercept.
   (b) Find the x-intercepts.
   (c) Find the vertex.
   (d) Sketch the graph including the line of symmetry and any extra point you get by symmetry.