Math-19 Homework #3

1. Simplify completely. Your answer should contain no negative exponents.

$$\frac{x^2+5x-24}{x^2-64}-\frac{\sqrt{x}+2x^{-\frac{1}{2}}+x^{-\frac{3}{2}}}{x^2-7x-8}+\frac{1}{x-2}$$

2. What is the domain of expression in problem 1? Express in set-difference (i.e., $\mathbb{R}-\{\ldots\}$) notation, interval notation, and graph.

3. Section 1.3 Problem 135.

4. Simplify.

$$\frac{(x+h)^2+(x+h)+1-(x+2)^2}{h}$$

5. Expand and then simplify completely.

$$\left(xy^2+\sqrt{x}\sqrt[3]{y}\right)^2$$

6. A careful solution of $4(x+2)=11$ is given below. Give the rationale for each step from the ten real number rules (A1–A4, M1–M4, LD, RD) and two additional rules (SUB, CAN). Note that some steps have two things to identify.

$4(x+2)=11$	
$4x+8=11$	_____, _____
$(4x+8)-8=11-8$	_____
$(4x+8)-8=3$	_____
$4x+(8-8)=3$	_____
$4x+0=3$	_____, _____
$4x=3$	_____, _____
$\frac{1}{4}(4x)=\frac{1}{4}(3)$	_____
$\frac{1}{4}(4x)=\frac{3}{4}$	_____
$(\frac{1}{4}4)x=\frac{3}{4}$	_____
$1x=\frac{3}{4}$	_____, _____
$x=\frac{3}{4}$	_____, _____

7. Section 1.4 Problem 70.
8. Solve for x.

$$5(x+3)-6(x-1)=-2(x+1)$$

9. Section 1.5 Problem 34.
10. Solve for x. Make sure that you find all solutions. Then, plug each solution back into the equation and evaluate both sides to show that each is in fact a proper solution.

$$|5(x+3)-2(x-1)|=5x+6$$