SEW Math HW 3 Due Wednesday August 1st
Please be sure to show all work for full credit.

1. Simplify the following as much as possible. Leave your answers with positive exponents only.

$-8^{\frac{4}{3}}$ $\left(\frac{25}{36}\right)^{-\frac{1}{2}}$ $\sqrt[3]{\frac{-3x}{375x^4}}$

$\sqrt{81x^6y^{10}}$ $\sqrt{32x^3y^8}$ $\sqrt[3]{24x^9y^{11}}$

2. Perform the indicated operation and simplify.

$2x\sqrt{3x} + 5\sqrt{12x^3} - x\sqrt{27x}$ $\sqrt[3]{2x^2y^4} \cdot \sqrt{4xy^2}$

$(\sqrt{5} + 3\sqrt{10})(2\sqrt{5} - \sqrt{10})$

3. Perform the indicated operation. To begin, rewrite this with fractional exponents. Write your answers back into radical form.

$$\frac{\sqrt{x^3}}{\sqrt[4]{x^3}}$$

4. Solve the following equations. Be sure to check your solutions.

$$2\sqrt{5-2x}-x=0$$

5. Simplify and rewrite in $a+bi$ form.

$$\frac{6-\sqrt{-45}}{3}$$

6. Multiply the numerator and denominator by the conjugate of the denominator (rationalize the denominator) and write your answer in $a+bi$ form.

$$\frac{3+4i}{1+2i}$$

7. Multiply and simplify. Write your answer in $a + bi$ form.
$(2 - 3i)(4 + 5i)$

8. Given the functions below, find the following.
$f(x) = x^2 - 3x$ $g(x) = x + 2$ $h(x) = 2x^3 - 5$

a. Find the composition $f(g(x))$

b. Find $h^{-1}(x)$

9. Given the quadratic function below, please answer the following.

$f(x) = x^2 - 2x - 8$

a. Find the vertex of $f(x)$, and write your answer in point form.

b. Find the x-intercepts of $f(x)$, and write your answers in point form.

c. Find the $y$intercept, and write your answer in point form.

d. Use your answers from parts a - c to sketch a graph of $f(x)$.