MAT 1372 Fall 2013 Sample Exam #2

1. Multiply and simplify:
   (a) $(4\sqrt{5xy^5}) \cdot (-2x\sqrt{75x^2})$
   (b) $\sqrt{7}(\sqrt{3x} - 2\sqrt{14})$
   (c) $(\sqrt{2} - 3\sqrt{3x})(5 + 2\sqrt{6x}))$
   (d) $(6 - \sqrt{5})^2$
   (e) $(5\sqrt{y} - \sqrt{2})(5\sqrt{y} + \sqrt{2})$
2. Write in simplest radical form:
   (a) $\dfrac{5}{\sqrt{2}}$
   (b) $\dfrac{5x\sqrt{3}}{2x^2\sqrt{9x}}$
   (c) $\sqrt{\dfrac{8}{6x}}$
   (d) $\dfrac{3}{2+\sqrt{7}}$
   (e) $\dfrac{\sqrt{3}+2\sqrt{5}}{\sqrt{3}-3\sqrt{5}}$
3. Solve and check:
   (a) $\sqrt{3x+1} - 7 = 0$
   (b) $\sqrt{a+11} - 5 = a$
   (c) $\sqrt{9p^2+8p-11} = 3p - 2$
   (d) $x - 3\sqrt{x-5} = 5$
4. Simplify
   (a) $\sqrt{-98}$

(b) $2\sqrt{-18} \cdot \sqrt{-50}$

(c) $\dfrac{\sqrt{-90}}{\sqrt{-125}}$

5. Peform the operation indicated then write in $a + bi$ form:

(a) $(-4 + 5i) - (2 - 3i)$

(b) $\left(\dfrac{2}{3} + 6i\right) + \left(\dfrac{4}{5} - \dfrac{1}{2}i\right)$

(c) $(-3 + 2i)(2 - 5i)$

(d) $(2 + 7i)(2 - 7i)$

(e) $\dfrac{2 - 7i}{3 + 4i}$

(f) $\dfrac{-4i}{1 - i}$

(g) $= \dfrac{4 - i}{3i}$

6. Solve by factoring:

(a) $x^2 - 4x = 5$

(b) $2x^2 - 11x - 21 = 0$

7. Solve by using the square root property:

(a) $4x^2 = 20$

(b) $(x - 3)^2 - 25 = 0$

8. Solve by completing the square:

(a) $x^2 - 8x + 13 = 0$

(b) $2x^2 = 6x + 10$

9. Solve by using the quadratic formula:

   (a) $2x^2 - 6x + 3 = 0$

   (b) $5x(x - 1) = x - 5$