Exam 2 Review

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) $\dfrac{\sqrt{-90}}{\sqrt{-125}}$ d) i^7 e) i^{34}

5. Write in $a+bi$ form: a) $(-4+5i)-(2-3i)$

   b) $(\tfrac{2}{3}+6i)+(\tfrac{4}{5}-\tfrac{1}{2}i)$ 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 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 using the quadratic formula:

a) $2x^2 - 6x + 3 = 0$ b) $5x(x-1) = x - 5$

Answer Key

1. a. $-40x^2y^2\sqrt{15xy}$ b. $\sqrt{21x}-14\sqrt{2}$

   c. $-11\sqrt{3x}+\sqrt{2}(5-18x)$ d. $41-12\sqrt{5}$ e. $25y-4$

2. a. $\dfrac{5\sqrt{2}}{2}$ b. $\dfrac{5\sqrt{3x}}{6x^2}$ c. $\dfrac{2\sqrt{3x}}{3x}$ d. $-2+\sqrt{7}$ e. $\dfrac{33+5\sqrt{15}}{-42}$

3. a. $x=16$ b. $a=-2$ ($a=-7$ is rejected)

   c. $p=\dfrac{3}{4}$ d. $x=5, x=14$

4. a. $7i\sqrt{2}$ b. -60 c. $\dfrac{3\sqrt{2}}{5}$ d. $-i$ e. -1

5. a. $-6+8i$ b. $\dfrac{22}{15}+\dfrac{11}{2}i$ c. $4+19i$ d. 53

   e. $-\dfrac{22}{25}-\dfrac{29}{25}i$ f. $2-2i$ g. $-\dfrac{1}{3}-\dfrac{4}{3}i$

6. a. $x=5, x=-1$ b. $x=-\dfrac{3}{2}, x=7$

7. a. $x=\pm\sqrt{5}$ b. $x=8, x=-2$

8. a. $(x-4)^2=3$, answer: $x=4\pm\sqrt{3}$

   b. $(x-\dfrac{3}{2})^2=\dfrac{29}{4}$, answer: $x=\dfrac{3\pm\sqrt{29}}{2}$

9. a. $x=\dfrac{3\pm\sqrt{3}}{2}$ b. $x=\dfrac{3}{5}\pm\dfrac{4}{5}i$