PROBLEM SET 7-2 AND 7-3
(Radical Expressions)

Simplify each expression and rationalize all denominators.

1. $\sqrt{5}\cdot\sqrt{40}$ **2.** $\sqrt[3]{4}\cdot\sqrt[3]{80}$ **3.** $\sqrt{x^5y^5}\cdot 3\sqrt{2x^7y^6}$

4. $5\sqrt{2xy^6}\cdot 2\sqrt{2x^3y}$ **5.** $\sqrt{2}\,(\sqrt{50}+7)$ **6.** $3(5+\sqrt{21})$

7. $\sqrt{5}\,(\sqrt{5}+\sqrt{15})$ **8.** $\sqrt[3]{2x}\cdot\sqrt[3]{4}\cdot\sqrt[3]{2x^2}$ **9.** $\sqrt[3]{3x^2}\cdot\sqrt[3]{x^2}\cdot\sqrt[3]{9x^3}$

10. $\dfrac{\sqrt{5x^4}}{\sqrt{2x^2y^3}}$ **11.** $\dfrac{5\sqrt{2}}{3\sqrt{7x}}$ **12.** $\dfrac{3\sqrt{11x^3y}}{-2\sqrt{12x^4y}}$

13. $\dfrac{1}{\sqrt[3]{9x}}$ **14.** $\dfrac{10}{\sqrt[3]{5x^2}}$ **15.** $\dfrac{\sqrt[3]{14}}{\sqrt[3]{7x^2y}}$

16. $\dfrac{3+\sqrt[3]{2}}{\sqrt[3]{2}}$ **17.** $\dfrac{5+\sqrt[4]{x}}{\sqrt[4]{x}}$ **18.** $\dfrac{4-2\sqrt[3]{6}}{\sqrt[3]{4}}$

19. $\dfrac{3+\sqrt{5}}{\sqrt{5}}$ **20.** $\dfrac{\sqrt{3}-\sqrt{2}}{\sqrt{8}}$ **21.** $\dfrac{4+\sqrt{6}}{\sqrt{2}+\sqrt{3}}$

22. $\sqrt{75}+2\sqrt{48}-5\sqrt{3}$ **23.** $\sqrt{75}-4\sqrt{18}+2\sqrt{32}$ **24.** $3\sqrt[3]{16}-4\sqrt[3]{54}+\sqrt[3]{128}$

25. $(2-\sqrt{98})(3+\sqrt{18})$ **26.** $(\sqrt{x}+\sqrt{3})(\sqrt{x}+2\sqrt{3})$ **27.** $(2\sqrt{5}+3\sqrt{2})(5\sqrt{5}-7\sqrt{2})$

Add or subtract:

28. $\dfrac{1}{1-\sqrt{5}}+\dfrac{1}{1+\sqrt{5}}$ **29.** $\dfrac{4}{\sqrt{5}-\sqrt{3}}-\dfrac{4}{\sqrt{5}+\sqrt{3}}$