Sample Problems

1. Simplify each of the following expressions. Assume that a represents a positive number.

   a) $\sqrt{32}$

   b) $\sqrt{45}$

   c) $\sqrt{48x^5y^3}$

   d) $\sqrt{125} - 3\sqrt{80} + \sqrt{45}$

   e) $\dfrac{\sqrt{24}}{\sqrt{54}}$

   f) $\sqrt{80a^{11}} - 2\sqrt{180a^{11}} + 3\sqrt{245a^{11}}$

   g) $\left(\sqrt{7}+2\right)\left(\sqrt{7}-2\right)$

   h) $\left(\sqrt{7}-2\right)^2$

   i) $\left(\sqrt{3}-1\right)^3$

   j) $\left(\sqrt{5x}-2\right)\left(\sqrt{5x}+3\right)$

   k) $\left(2-\sqrt{x}\right)\left(3+2\sqrt{x}\right)$

   l) $\left(\sqrt{x}-\sqrt{2}\right)^2$

5. Solve each of the following quadratic equations by completing the square.

   a) $x^2 = 4x + 1$

   b) $x^2 + 13 = 8x$

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