TUTORING

[absolute value + radicals]

1. Solve and verify:
   a. $|4x-1|=3$
   b. $\sqrt{y}=7$
   c. $\sqrt{3x-5}=4$
   d. $12-\sqrt{2k}=6$
   e. $\sqrt{3m+12}=1-2m$
   f. $\sqrt{x+4}+\sqrt{1-x}=3$
   g. $-|3-7x|=4$
   h. $\sqrt{8x+1}-x=2$
   i. $|2x-5|=5x-3$
   j. $5|k+3|-16=3|k+3|+4$
2. Solve:
   a. $|2x+7|\geq 5$
   b. $|6-2x|\leq 8$
   c. $|4-3x|\leq -5$
   d. $|2x+5|>-1$
   e. $|5x-2|<3$
3. Simplify and evaluate, if possible:
   a. $81^{-\frac{3}{4}}$
   b. $16^{0.5}$
   c. $\left(x^{\frac{2}{3}}\right)^9 \div (9x^8)^{\frac{1}{2}}$
   d. $6^{\frac{1}{9}}\times 6^{\frac{1}{3}}$
   e. $(243a^{20}b^{10}c^5)^{\frac{3}{5}}$
   f. $\dfrac{(a^3b^9)^{\frac{1}{3}}(a^4b^2)^{\frac{1}{2}}}{\left(a^{\frac{1}{2}}b^{\frac{1}{3}}\right)^6}$
   g. $\left(k^{\frac{5}{6}}+4k^{\frac{1}{6}}\right)\left(k^{\frac{5}{6}}\right)$
   h. $4|-5|-3|7-5|+2|3-8|$
   i. $\sqrt{4a^2}$
   j. $\sqrt{\frac{1}{4}+\left(\frac{1}{9}\right)^{-2}}-8^{-\frac{1}{3}}$
   k. $25^{\frac{1}{2}}+32^0-\sqrt[3]{125}$
   l. $x^{-\frac{3}{2}}\left(\frac{1}{x}\right)$
4. Simplify fully:
   a. $-4\sqrt{32}-\sqrt{50}+7\sqrt{200}$
   b. $4(2\sqrt{3}-5\sqrt{2})-2(3\sqrt{3}+4\sqrt{2})$
   c. $2\sqrt[3]{5}+3\sqrt[3]{40}-8\sqrt[3]{135}$
   d. $(3\sqrt{2}+5\sqrt{3})^2-(\sqrt{50}-\sqrt{32})(\sqrt{2}-\sqrt{18})$
   e. $\sqrt[4]{\dfrac{\sqrt{x^3y^5}\sqrt{y}}{x^{\frac{2}{3}}y^{\frac{1}{2}}}}$
   f. $(3\sqrt{2}-1)^2-4(2\sqrt{2}+1)$
5. Show that $\sqrt{10}-3$ is a root of the equation $x^2+6x-1=0$. (Do not solve)
6. Simplify and leave answers in simplest mixed radical form
   a. $2\sqrt{3}\cdot 5\sqrt{6}$
   b. $\frac{-14\sqrt{24}}{2\sqrt{6}}$
   c. $3\sqrt{7}-\sqrt{5}+2\sqrt{7}+4\sqrt{5}$
   d. $3\sqrt{27}-2\sqrt{50}-5\sqrt{75}+2\sqrt{32}$

e. $2\sqrt{2}\left(5\sqrt{6}-3\sqrt{2}\right)$
f. $\left(2\sqrt{5}-4\sqrt{3}\right)\left(\sqrt{5}+2\sqrt{3}\right)$

7. Rationalize the denominator
   a. $\frac{2\sqrt{2}}{\sqrt{5}}$
   b. $\frac{3}{\sqrt{12}}$