2.3 Solving Radical Equations cont.

Solve $\sqrt{3x^2-5} = x+4$. State any restrictions on the variable.

① $3x^2-5 \geq 0$

$3x^2 \geq 5$

$x^2 \geq \frac{5}{3}$

$x \geq \sqrt{\frac{5}{3}}$ $x \leq -\sqrt{\frac{5}{3}}$

$x \geq \frac{\sqrt{5}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$ $x \leq -\frac{\sqrt{5}}{\sqrt{3}}$

$x \geq \frac{\sqrt{15}}{3}$ $x \leq -\frac{\sqrt{15}}{3}$

$\left(\sqrt{3x^2-5}\right)^2 = (x+4)^2$

$3x^2-5 = x^2+8x+16$

$2x^2-8x-21=0$

$x = \frac{+8 \pm \sqrt{(-8)^2-4(2)(-21)}}{2(2)}$

$= \frac{8 \pm \sqrt{232}}{4}$

$= \frac{8 \pm \sqrt{4}\sqrt{58}}{4}$

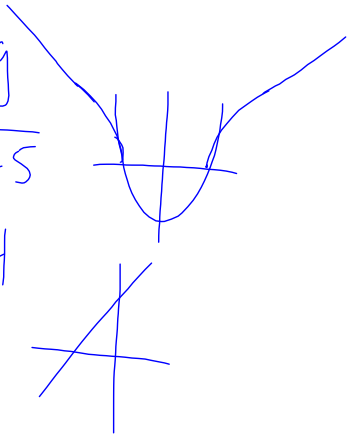
$= \frac{8 \pm 2\sqrt{58}}{4}$

$= \frac{(4 \pm \sqrt{58})}{2}$

② Graphing

$y_1 = \sqrt{3x^2-5}$

$y_2 = x+4$



$x \doteq 5.8$ $x \doteq -1.8$

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