1. Solve each of the following square root equations. Check your answers.

(a) $(\sqrt{x})^2 = (5)^2$

$x = 25$

check:

$\sqrt{25} = 5$

$5 = 5$ ✓

(b) $(\sqrt{3x+4})^2 = (8)^2$

$3x + 4 = 64$

$3x = 60$

$x = 20$

check:

$\sqrt{3(20)+4} = 8$

$8 = 8$ ✓

(c) $\left(\sqrt{\dfrac{2x}{3}}\right)^2 = (6)^2$

$\dfrac{2x}{3} = 36$

$108 = 2x$

$54 = x$

check:

$\sqrt{\dfrac{2(54)}{3}} = 6$

$6 = 6$ ✓

(d) $\dfrac{4\sqrt{x}}{4} = \dfrac{24}{4}$

$(\sqrt{x})^2 = (6)^2$

$x = 36$

check:

$4\sqrt{36} = 24$

$24 = 24$ ✓

PEMDAS

(e) $5\sqrt{1-5x} - 3 = 27$

$\phantom{5\sqrt{1-5x}}+3 +3$

$\dfrac{5\sqrt{1-5x}}{5} = \dfrac{30}{5}$

$(\sqrt{1-5x})^2 = (6)^2$

$1 - 5x = 36$

$-5x = 35$

$x = -7$

check:

$5\sqrt{1-5(-7)} - 3 = 27$

$27 = 27$ ✓

(f) $(\sqrt{2x^2 + 17x})^2 = (3)^2$

$2x^2 + 17x = 9$

M:18

A

$2x^2 + 17x - 9 = 0$

$2x^2 + 18x - 1x - 9 = 0$

$2x(x+9) - 1(x+9) = 0$

$(x+9)(2x-1) = 0$

$x = -9 \mid x = \frac{1}{2}$

check:

$\sqrt{2(-9)^2 + 17(-9)} = 3$

$3 = 3$ ✓

$\sqrt{2(\frac{1}{2})^2 + 17(\frac{1}{2})} = 3$

$3 = 3$ ✓

2. Which of the following values solves the equation $\dfrac{\sqrt{4x+19}}{2}=2$?

(1) $-\dfrac{9}{2}$

(3) $\dfrac{4}{3}$

(2) $-\dfrac{3}{4}$ ⟵ circled

(4) $\dfrac{1}{2}$

$\left(\sqrt{4x+19}\right)^2=(4)^2$

$4x+19=16$

$4x=-3$

$x=-3/4$

3. Solve each of the following equations for all values of x. Check your possible solutions in the original equation. Reject any extraneous roots.

(a) $(x-1)^2=\left(\sqrt{x+11}\right)^2$

$(x-1)(x-1)=x+11$

$x^2-1x-1x+1=x+11$

$x^2-3x-10=0$

$(x+2)(x-5)=0$

$x=-2 \mid x=5$

Reject

check:

$(-2)-1=\sqrt{(-2)+11}$

$-3\ne 3$

$(5)-1=\sqrt{5+11}$

$4=4\checkmark$

(b) $\dfrac{\sqrt{6x+4}-1}{4}=x$

$4x=\sqrt{6x+4}-1$

$(4x+1)^2=\left(\sqrt{6x+4}\right)^2$

$(4x+1)(4x+1)=6x+4$

$16x^2+4x+4x+1=6x+4$

$16x^2+8x+1=6x+4$

$16x^2+2x-3=0$ M:-48 A

$16x^2+8x-6x-3=0$

$8x(2x+1)\}-3(2x+1)=0$

$(2x+1)(8x-3)=0$

$x=-1/2 \mid x=3/8$

Reject

check:

$\dfrac{\sqrt{6(-1/2)+4}-1}{4}=-1/2$

$0\ne -1/2$

$\dfrac{\sqrt{6(3/8)+4}-1}{4}=3/8$

$3/8=3/8\checkmark$