(37) $\sqrt{6x-5} + 10 = 3$

$-10 \quad -10$

$\sqrt{6x-5} = -7$

NO SOLUTION

Square roots cannot equal negatives.

(41) $(x-12)^2 = (\sqrt{16x})^2$

$(x-12)(x-12)$

$x^2-12x-12x+144 = 16x$

$x^2-24x+144 = 16x$

$-16x \quad -16x$

$1x^2-40x+144 = 0$

$(x-4)(x-36) = 0$

$x-4=0$

$+4 \quad +4$

$x=4$

extraneous solution

$x-36=0$

$+36 \quad +36$

$x=36$

$x=4$: $4-12=\sqrt{16\cdot4}$

$-8=\sqrt{64}$

$-8=8$ ✗

$x=36$: $36-12=\sqrt{16\cdot36}$

$24=\sqrt{576}$

$24=24$ ✓

$336 \times 1 \rightarrow 216 + 360 \rightarrow 576$

Sum -40	prod. 144
$-4+-36$	$1\cdot144$
	$2\cdot72$
	$3\cdot48$
	$-4\cdot-36$

$\frac{-4}{1} \quad \frac{-36}{1}$

$(1x-4)(1x-36)$

(45) $\left(\sqrt{8x+1}\right)^2 = (x+2)^2$

$(x+2)(x+2)$

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

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

$-8x \quad -8x$

$1 = x^2-4x+4$

$-1 \quad -1$

$0 = 1x^2-4x+3$

$0 = (x-1)(x-3)$

$x-1=0$ $\quad +1 \ +1$ $\quad x=1$

$x-3=0$ $\quad +3 \ +3$ $\quad x=3$

$x=1$: $\sqrt{8\cdot1+1} = 1+2$

$\sqrt{8+1} = 3$

$\sqrt{9} = 3$

$3 = 3$ ✓

$x=3$: $\sqrt{8\cdot3+1} = 3+2$

$\sqrt{24+1} = 5$

$\sqrt{25} = 5$

$5 = 5$ ✓

Sum -4	prod. 3
$-1+-3$	$-1\cdot-3$

$\frac{-1}{1} \quad \frac{-3}{1}$

$(1x-1)(1x-3)$

49) $-\left(\sqrt{8x+\frac{4}{3}}\right)^2 = \left(\sqrt{2x+\frac{1}{3}}\right)^2$

$(-1)(-1)=1$

$$8x+\frac{4}{3} = 2x+\frac{1}{3}$$

$$-\frac{1}{3} \qquad -\frac{1}{3}$$

$$8x + 1 = 2x$$

$$-8x \qquad -8x$$

$$\frac{1}{-6} = \frac{-6x}{-6}$$

$$x = \frac{1}{-6}$$

(51) $\sqrt[4]{2x} + \sqrt[4]{x+3} = 0$

$-\sqrt[4]{x+3}$ $-\sqrt[4]{x+3}$

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

$(-1)^4 = -1 \cdot -1 \cdot -1 \cdot -1 = 1$

$2x = x+3$

$-x \quad -x$

$x = 3$

NO SOLUTION

$\sqrt[4]{2 \cdot 3} = -\sqrt[4]{3+3}$

$\sqrt[4]{6} = -\sqrt[4]{6}$ X