1) $\sqrt{10x^2-49} = 3x$

2) $(6x-5)^{1/3} = (3x+2)^{1/3}$

3) $\sqrt{3x+7} = x+1$

4) $\sqrt{x+2} = 4-\sqrt{x}$

5) $\sqrt{x+8} - 1 = \sqrt{x} + \sqrt{3}$

6) $\sqrt{x+3} = \sqrt{x+1} + 1$

7) $\frac{6}{x+1} = \frac{1}{4} - \frac{9}{x-1}$

8) $\frac{2x}{x+1} + \frac{x-5}{(x-1)(x+1)} = 1$

9) $\frac{2x-5}{x-3} - 2 = \frac{3}{x+3}$

10) $\frac{3x+2}{x+1} - \frac{x-1}{x-3} = \frac{5}{2}$

Q.54

5) $(\sqrt{x+8} - 1)(\sqrt{x+8} - 1) = (\sqrt{x} + \sqrt{3})(\sqrt{x} + \sqrt{3})$

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

$x - 2\sqrt{x+8} + 9 = x + 2\sqrt{3x} + 3$

$-3 \quad -x \quad -3$

$\frac{-2\sqrt{x+8} + 6}{2} = \frac{2\sqrt{3x}}{2}$

$$-\sqrt{x+8}+3=\sqrt{3x}$$

$$-\sqrt{x+8}=\sqrt{3x}-3$$

$$\sqrt{x+8}=(-\sqrt{3x}+3)(-\sqrt{3x}+3)$$

$$x+8=3x-6\sqrt{3x}+9$$

$$x+8=3x-6\sqrt{3x}+9$$
$$-8 \qquad\qquad -8$$

$$x=3x-6\sqrt{3x}+1$$

$$(-2x-1)^2=(-6\sqrt{3x})^2$$

$$(-2x-1)(-2x-1)=(-6\sqrt{3x})(-6\sqrt{3x})$$

$$4x^2+4x+1=36\cdot 3x$$

$$4x^2+4x+1=108x$$
$$-108x \qquad -108x$$

$$4x^2-104x+1=0$$

$$\frac{104\pm\sqrt{(-104)^2-4(4)(1)}}{8}$$

$$\frac{104\pm\sqrt{10816-16}}{}$$

$$\frac{}{8}$$

$$\frac{104 \pm \sqrt{10800}}{8}$$

$$\frac{104+\sqrt{10800}}{8} \qquad \frac{104-\sqrt{10800}}{8}$$

✗ ✓

c) $\left(\sqrt{x+3}\right)^2 = \left(\sqrt{x+1}+1\right)\left(\sqrt{x+1}+1\right)$

$x+3 = x+1+\sqrt{x+1}+\sqrt{x+1}+1$

$x+3 = x+2+2\sqrt{x+1}$

$-2 \qquad -2$

$$\frac{1}{2} = \frac{2\sqrt{x+1}}{2}$$

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

$$\frac{1}{4} = x+1$$

$$-1 \qquad -1$$

$$-\frac{3}{4} = x$$

7) $\dfrac{60 \pm \sqrt{3652}}{2}$

LCD: $4(x+1)(x-1)$

7) $\frac{6}{x+1} = \frac{1}{4} - \frac{9}{x-1}$

$\frac{6}{x+1} \cdot \frac{4(x-1)}{4(x-1)} = \frac{1}{4} \cdot \frac{(x-1)(x+1)}{(x-1)(x+1)} - \frac{9}{x-1} \cdot \frac{4(x+1)}{4(x+1)}$

$24(x-1) = (x-1)(x+1) - 36(x+1)$

$24x - 24 = x^2 - 1 - 36x - 36$

$-24x + 24 \qquad -24x + 24$

$0 = x^2 - 60x - 13$

$\frac{60 \pm \sqrt{3600 - 4(1)(-13)}}{2}$

$\frac{60 \pm \sqrt{3652}}{2}$