p. 410 # 8, 9

8) $\sqrt{(x+2)^2} = \sqrt{25}$

$x+2 = \pm 5$

$-2 \quad -2$

$x = -2 \pm 5$

$x = -2+5$ → $x = 3$

$x = -2-5$ → $x = -7$

$\boxed{x = \{-7, 3\}}$

9) $\sqrt{(x-4)^2} = \sqrt{20}$

$x-4 = \pm 2\sqrt{5}$

$+4 \quad +4$

$\boxed{x = 4 \pm 2\sqrt{5}}$

$\sqrt{20}$

$\sqrt{4 \cdot 5}$

$\sqrt{4} \cdot \sqrt{5}$

$2\sqrt{5}$

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p. 411 # 13, 14

13) $x^2 + 6x + 4 = 0$

<u>completing the square</u>

$x^2 + 6x + 4 = 0$

$-4 \quad -4$

$x^2 + 6x \,(+9) = -4 \,(+9)$

$\sqrt{(x+3)^2} = \sqrt{5}$

$x+3 = \pm\sqrt{5}$

$-3 \quad -3$

$\boxed{x = -3 \pm \sqrt{5}}$

<u>Quadratic Formula</u>

$x^2 + 6x + 4 = 0$

$x = \dfrac{-6 \pm \sqrt{(6)^2 - 4(1)(4)}}{2(1)}$

$x = \dfrac{-6 \pm \sqrt{36-16}}{2}$

$x = \dfrac{-6 \pm \sqrt{20}}{2}$ → $\sqrt{20}$, $\sqrt{4 \cdot 5}$, $\sqrt{4} \cdot \sqrt{5}$, $2\sqrt{5}$

$x = \dfrac{-6 \pm 2\sqrt{5}}{2}$ (−3, 1)

$\boxed{x = -3 \pm \sqrt{5}}$

Same

14) $10x^2+11x-6=0$ *use quad. formula b/c $a>1$

$$x=\frac{-11\pm\sqrt{(11)^2-4(10)(-6)}}{2(10)}$$

$$x=\frac{-11\pm\sqrt{121+240}}{20}$$

$$x=\frac{-11\pm\sqrt{361}}{20}$$ ← perfect square $\sqrt{361}=19$

$$x=\frac{-11\pm19}{20}$$

$$x=\frac{-11+19}{20}=\frac{8}{20}=\boxed{\frac{2}{5}}$$

$$x=\frac{-11-19}{20}=\frac{-30}{20}=\frac{-3}{2}$$

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p. 413 #19-22

19) $2(x-5)^2+13=31$

$-13\quad -13$

$$2(x-5)^2=18$$

$$\frac{2(x-5)^2}{2}=\frac{18}{2}$$

$$\sqrt{(x-5)^2}=\sqrt{9}$$

$$x-5=\pm3$$

$+5\quad +5$

$$x=5\pm3$$

$x=5+3$ $\quad$ $x=5-3$

$\boxed{x=8}$ $\quad$ $\boxed{x=2}$

p. 115 #11-22

20) $\frac{(x+2)^2}{5} + 7 = 16$

$-7 \quad -7$

$5 \cdot \frac{(x+2)^2}{5} = 9 \cdot 5$

$\sqrt{(x+2)^2} = \sqrt{45}$

$\sqrt{45}$
$\sqrt{9 \cdot 5}$
$\sqrt{9} \cdot \sqrt{5}$
$3\sqrt{5}$

$x + 2 = \pm 3\sqrt{5}$

$-2 \quad -2$

$\boxed{x = -2 \pm 3\sqrt{5}}$

21) $x^2 - 8x + 5 = 0$

$-5 \quad -5$

$x^2 - 8x \,(+16) = -5 \,(+16)$

$\sqrt{(x-4)^2} = \sqrt{11}$

$x - 4 = \pm\sqrt{11}$

$+4 \quad +4$

$\boxed{x = 4 \pm \sqrt{11}}$

22) $3x^2 + 10x - 5 = 0$

Quad. Formula

$x = \frac{-10 \pm \sqrt{(10)^2 - 4(3)(-5)}}{2(3)}$

$x = \frac{-10 \pm \sqrt{100 + 60}}{6}$

$x = \frac{-10 \pm \sqrt{160}}{6}$

$\sqrt{160}$
$\sqrt{16}\sqrt{10}$
$4\sqrt{10}$

$x = \frac{-10 \pm 4\sqrt{10}}{6}$ (2, 3)

$\boxed{x = \frac{-5 \pm 2\sqrt{10}}{3}}$