Alg 2: Homework 35

p. 192: 4, 5, 18, 21, 24

(4) $x^2 - 8x + 16$

(5) $x^2 - 2x + 1$

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

$x^2 + 2x \boxed{+ 1} = 5 \boxed{+ 1}$

$(x + 1)^2 = 6$

$\sqrt{(x+1)^2} = \pm\sqrt{6}$

$x + 1 = \pm\sqrt{6}$

$x = \boxed{-1 \pm \sqrt{6}}$

(21) $\frac{2}{2}x^2 + \frac{12}{2}x + \frac{3}{2} = \frac{0}{2}$

$x^2 + 6x + \frac{3}{2} = 0$

$x^2 + 6x \boxed{+ 9} = -\frac{3}{2} \boxed{+ 9}$

$(x + 3)^2 = -\frac{3}{2} + \frac{18}{2}$

$\sqrt{(x+3)^2} = \pm\sqrt{\frac{15}{2}}$

$x + 3 = \pm\frac{\sqrt{15}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$x + 3 = \pm\frac{\sqrt{30}}{2}$

$x = \boxed{-3 \pm \frac{\sqrt{30}}{2}}$

(24) $\frac{4x^2}{4} - \frac{20x}{4} + \frac{9}{4} = \frac{0}{4}$

$x^2 - 5x + \frac{9}{4} = 0$

$x^2 - 5x + \frac{25}{4} = -\frac{9}{4} + \frac{25}{4}$

$\left(x - \frac{5}{2}\right)^2 = \frac{16}{4}$

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

$x - \frac{5}{2} = \pm 2$

$x = \frac{5}{2} \pm 2$

$x = \frac{5}{2} \pm \frac{4}{2}$

$x = \frac{5}{2} + \frac{4}{2}$ v $x = \frac{5}{2} - \frac{4}{2}$

$x = \frac{9}{2}$ v $x = \frac{1}{2}$

$\boxed{\left\{\frac{9}{2}, \frac{1}{2}\right\}}$

p. 93: 6, 14

(6) $\sqrt{8b^3} = \sqrt{4}\sqrt{2}\sqrt{b^2}\sqrt{b} = \boxed{2b\sqrt{2b}}$

(14) $\sqrt[3]{40a^4} = \sqrt[3]{8}\sqrt[3]{5}\sqrt[3]{a^3}\sqrt[3]{a} = \boxed{2a\sqrt[3]{5a}}$

p. 113: 21

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

$x^2 + 6x + 9 = 1 - 3x$

$x^2 + 9x + 8 = 0$

$(x+8)(x+1) = 0$

$x + 8 = 0$ v $x + 1 = 0$

$x = -8$ v $x = -1$

Check ($x = -8$)

$-8 + 3 \stackrel{?}{=} \sqrt{1-3(-8)}$

$-5 \stackrel{?}{=} \sqrt{1+24}$

$-5 \stackrel{?}{=} \sqrt{25}$

$-5 \neq 5$

reject $x = -8$

Check ($x = -1$)

$-1 + 3 \stackrel{?}{=} \sqrt{1-3(-1)}$

$2 \stackrel{?}{=} \sqrt{1+3}$

$2 \stackrel{?}{=} \sqrt{4}$

$2 = 2$ ✓

$\boxed{\{-1\}}$