

Alg 2: Homework 34

p. 192:

$$\textcircled{3} \quad x^2 + 6x + 9$$

$$\textcircled{6} \quad x^2 - 12x + 36$$

$$\textcircled{8} \quad x^2 - 3x + \frac{9}{4}$$

$$\textcircled{19} \quad x^2 - 6x + 2 = 0$$

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

$$\sqrt{(x-3)^2} = \pm\sqrt{7}$$

$$x - 3 = \pm\sqrt{7}$$

$$x = 3 \pm \sqrt{7}$$

$$\textcircled{20} \quad x^2 - 8x + 4 = 0$$

$$x^2 - 8x + 16 = -4 + 16$$

$$\sqrt{(x-4)^2} = \pm\sqrt{12}$$

$$x - 4 = \pm\sqrt{12}$$

$$x - 4 = \pm\sqrt{4\sqrt{3}}$$

$$x - 4 = \pm 2\sqrt{3}$$

$$x = 4 \pm 2\sqrt{3}$$

$$\textcircled{22} \quad \frac{3x^2 - 6x - 1}{3} = 0$$

$$x^2 - 2x - \frac{1}{3} = 0$$

$$x^2 - 2x + 1 = \frac{1}{3} + 1$$

$$\sqrt{(x-1)^2} = \pm \sqrt{\frac{4}{3}}$$

$$x - 1 = \pm \sqrt{\frac{4}{3}}$$

$$x - 1 = \pm \frac{\sqrt{4}}{\sqrt{3}}$$

$$x = 1 \pm \frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$$

$$x = \boxed{1 \pm \frac{2\sqrt{3}}{3}}$$

$$\textcircled{23} \quad \frac{2x^2 - 6x + 3}{2} = 0$$

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

$$x^2 - 3x + \frac{9}{4} = -\frac{3}{2} + \frac{9}{4}$$

$$\left(x - \frac{3}{2}\right)^2 = -\frac{6}{4} + \frac{9}{4}$$

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

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

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

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

$$\text{or } \boxed{\frac{3 \pm \sqrt{3}}{2}}$$

p. 112: 17

$$(\sqrt{5x+2})^2 = (\sqrt{9x-14})^2$$

$$5x+2 = 9x-14$$

$$16 = 4x$$

$$4 = x$$

$$\boxed{\{4\}}$$

Check

$$\sqrt{5(4)+2} \stackrel{?}{=} \sqrt{9(4)-14}$$

$$\sqrt{20+2} = \sqrt{36-14}$$

$$\sqrt{22} = \sqrt{22}$$

p. 97: 18

$$\sqrt{24} + 2\sqrt{\frac{3}{2}}$$

$$= \sqrt{4\sqrt{6}} + 2\frac{\sqrt{3}\sqrt{2}}{\sqrt{2}\sqrt{2}} = 2\sqrt{6} + \frac{2\sqrt{6}}{2}$$

$$= 2\sqrt{6} + \sqrt{6} = \boxed{3\sqrt{6}}$$

p. 56: 19

$$\frac{2}{a^2-4} - \frac{1}{a^2+2a} \quad [LCD = a(a+2)(a-2)]$$

$$= \left(\frac{2}{(a+2)(a-2)}\right)\frac{a}{a} - \left(\frac{1}{a(a+2)}\right)\frac{(a-2)}{(a-2)}$$

$$= \frac{2a}{a(a+2)(a-2)} - \frac{a-2}{a(a+2)(a-2)}$$

$$= \frac{2a - (a-2)}{a(a+2)(a-2)} = \frac{2a - a + 2}{a(a+2)(a-2)}$$

$$= \frac{a+2}{a(a+2)(a-2)} = \boxed{\frac{1}{a(a-2)}}$$

undefined when
 $a = 0$, $a = 2$,
or $a = -2$