p433 51-59 ODD, 67, 76-79

(51) $\sqrt{2x+14}-6 \geq 4$

$+6 \quad +6$

$(\sqrt{2x+14})^2 \geq (10)^2$

$2x+14 \geq 100$

$-14 \quad -14$

$\frac{2x}{2} \geq \frac{86}{2}$

$\boxed{x \geq 43}$

$2x+14 \geq 0$

$2x \geq -14$

$x \geq -7$

(53) $6+\sqrt{3y+4} < 6$

$-6 \quad -6$

$(\sqrt{3y+4})^2 < 0^2$

$3y+4 < 0$

$-4 \quad -4$

$\frac{3y}{3} < \frac{-4}{3}$

$y < -\frac{4}{3}$

$\boxed{\text{No Real Solution}}$

$3y+4 \geq 0$

$3y \geq -4$

$y \geq -\frac{4}{3}$

(55) $\sqrt{d+3}+\sqrt{d+7} > 4$

$(\sqrt{d+3})^2 > (4-\sqrt{d+7})^2$

$d+3 > (4-\sqrt{d+7})(4-\sqrt{d+7})$

$d+3 > 16-4\sqrt{d+7}-4\sqrt{d+7}+d+7$

$d+3 > 23+d-8\sqrt{d+7}$

$-23-d$

$\frac{-20}{-8} > \frac{-8\sqrt{d+7}}{-8}$

$\left(\frac{5}{2}\right)^2 < (\sqrt{d+7})^2$

$4\left(\frac{25}{4} < d+7\right)$

$25 < 4d+28$

$-28 \quad -28$

$\frac{-3}{4} < \frac{4d}{4}$

$-\frac{3}{4} < d$

$\boxed{d > -\frac{3}{4}}$

$d+3 > 0 \quad d+7 > 0$

$d > -3 \quad d > -7$

(57) $\sqrt{2y+5}+3 \leq 6$

$-3 \quad -3$

$(\sqrt{2y+5})^2 \leq 3^2$

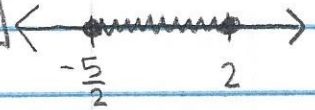
$2y+5 \leq 9$

$-5 \quad -5$

$\frac{2y}{2} \leq \frac{4}{2}$

$y \leq 2$

$\boxed{-\frac{5}{2} \leq y \leq 2}$



$2y+5 \geq 0$

$2y \geq -5$

$y \geq -\frac{5}{2}$

(59) $-3+\sqrt{6a+1}>4$

$+3 \quad +3$

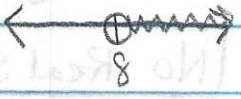
$(\sqrt{6a+1})^2>(7)^2$

$6a+1>49$

$-1 \quad -1$

$\frac{6a}{6}>\frac{48}{6}$

$\boxed{a>8}$



$6a+1\geq 0$

$6a\geq -1$

$a\geq -\frac{1}{6}$

(67) $\sqrt{x+2}-7=-10$

(76) $\frac{4}{5+i}\cdot\frac{5-i}{5-i}=\frac{20-4i}{25-5i+5i-i^2}$

$=\frac{20-4i}{26}=\boxed{\frac{10-2i}{13}}$ (A)

(77) G

(78) $20+20+x=56$

$40+x=56$

$\boxed{x=16 \text{ in}}$

(79) $\sqrt{x+5}+1=4$

$-1 \quad -1$

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

$x+5=9$

$\boxed{x=4}$ (A)

Algebra 2 Name Key

Radical Equations day 2 with p 433 #50-60, 67, 76-79

Hour ____

Solve each equation. Remember to check for extraneous solutions.

1) $6 = \sqrt{5p+66} - p$

$+p \quad +p$

$(6+p)^2 = (\sqrt{5p+66})^2$

$36+12p+p^2 = 5p+66$

$p^2+7p-30=0$

$(p+10)(p-3)=0$

$p=-10,3$

$6=\sqrt{-50+66}+10$

$6=14$ x

$6=\sqrt{15+66}-3$

$6=9-3$

$6=6$ ✓

$\boxed{p=3}$

2) $(\sqrt{4x+13})^2=(x-2)^2$

$4x+13=x^2-4x+4$

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

$(x-9)(x+1)=0$

$x=9,-1$

$\sqrt{4(9)+13}=9-2$

$=7=7$ ✓

$\sqrt{4(-1)+13}=-1-2$

$=3=-3$ x

$\boxed{x=9}$

3) $(\sqrt{7n-7})^2=(n-1)^2$

$7n-7=n^2-2n+1$

$n^2-9n+8=0$

$(n-8)(n-1)=0$

$n=8,1$

$\sqrt{7(8)-7}=8-1$

$=7=7$ ✓

$\sqrt{7(1)-7}=1-1$

$=0=0$ ✓

$\boxed{n=8,1}$

4) $x^2=(\sqrt{90-x})^2$

$x^2=90-x$

$x^2+x-90=0$

$(x+10)(x-9)=0$

$x=-10,9$

$-10=\sqrt{90-(-10)}$

$=-10=10$ x

$9=\sqrt{90-9}$

$9=9$ ✓

$\boxed{x=9}$

5) $(\sqrt{8v})^2=v^2$

$8v=v^2$

$v^2-8v=0$

$v(v-8)=0$

$v=0,8$

$\sqrt{8(0)}=0$

$0=0$ ✓

$\sqrt{8(8)}=8$

$=8=8$ ✓

$\boxed{v=0,8}$

6) $6+\sqrt{m}=m$

$-6 \quad -6$

$(\sqrt{m})^2=(m-6)^2$

$m=m^2-12m+36$

$m^2-13m+36=0$

$(m-9)(m-4)=0$

$m=9,4$

$6+\sqrt{9}=9$

$9=9$ ✓

$6+\sqrt{4}=4$

$8=4$ x

$\boxed{m=9}$

7) $(-1+\sqrt{3x-8})^2=(\sqrt{5-x})^2$

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

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

$-2\sqrt{3x-8}+3x-7=5-x$

$+3x \quad +7 \quad +7 \quad -3x$

$\frac{-2\sqrt{3x-8}}{-2}=\frac{12-4x}{-2}$

$(\sqrt{3x-8})^2=(-6+2x)^2$

$3x-8=36-24x+4x^2$

$4x^2-27x+44=0$

$4x^2-16x-11x+44=0$

$4x(x-4)-11(x-4)$

$(x-4)(4x-11)=0$

$x=4,\frac{11}{4}$

$-1+\sqrt{3(4)-8}=\sqrt{5-4}$

$1=1$ ✓

$-1+\sqrt{3(\frac{11}{4})-8}=\sqrt{5-\frac{11}{4}}$

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

$\boxed{x=4}$

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

$4x+4=1+\sqrt{2x+3}+\sqrt{2x+3}+2x+3$

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

$-2x-4 \quad -2x-4$

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

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

$x^2=2x+3$

$x^2-2x-3=0$

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

$x=3,-1$

$\sqrt{4(3)+4}=-1-\sqrt{2(3)+3}$

$=4=-4$ x

$\sqrt{4(-1)+4}=-1-\sqrt{2(-1)+3}$

$=0=-2$ x

$\boxed{\text{No Solution}}$

176

16 11

Answers to Radical Equations day 2 with p 433 #50-60, 67, 76-79

1) {3}
2) {9}
3) {1, 8}
4) {9}
5) {0, 8}
6) {9}
7) {4}
8) No solution.

$(-6+2x)(-6+2x)$

$36-12x-12x+4x^2$