College Algebra Answer Key

① $14-[-3(y-4)+9]=4[(2y+3)-6]+4$

$14-[-3y+12+9]=4[2y-3]+4$

$14+3y-21=8y-12+4$

$3y-7=8y-8$

$-7=5y-8$

$1=5y$

$\frac{1}{5}=y$

② $x\neq 1$ $\quad x-1=0$

$x=1$

③ $\frac{4}{x-1}-\frac{8}{x-1}=3$

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

$-4=3(x-1)$

$-4=3x-3$

$-1=3x$

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

④ $x=$ trip distance

$16+\frac{3}{4}x+\frac{1}{12}x=x$

$16+\frac{9}{12}x+\frac{1}{12}x=x$

$16+\frac{10}{12}x=x$

$16=\frac{2}{12}x$

$\frac{12}{2}\cdot 16^{8}=x$

$96=x$ miles

⑤ 9, 11, 13, 15

⑥ $l=2w+1$

$2(2w+1)+2w=20$

$4w+2+2w=20$

$6w+2=20$

$6w=18$

$w=3$

$l=7$

⑦ $.08x+4(.20)=.12$

(8) $\frac{95+82+90+71+2x}{6} = 90$

$\frac{267+2x}{5} = 91$

(9) $6y^2 - 7y - 5 = 0$ $\quad -30$

$x = \frac{7 \pm \sqrt{49-4(6)(-5)}}{12}$

$= \frac{7 \pm \sqrt{49+120}}{12}$

$= \frac{7 \pm \sqrt{169}}{12}$

$= \frac{7 \pm 13}{12} = \frac{20}{12}$ or $\frac{-6}{12} = \boxed{\frac{5}{3} \text{ or } -\frac{1}{2}}$

(10) $(2x-4)^2 = -64$

$2x - 4 = \pm 8i$

$2x = 4 \pm 8i$

$x = \frac{4 \pm 8i}{2}$

$\boxed{= 2 \pm 4i}$

(11) $x^2 - 4x - 12 = 0$

$(x-6)(x+2) = 0$

$\boxed{x = 6 \quad x = -2}$

(12) $8f^2 - \frac{1}{3}f - \frac{7}{16} = 0$

$x = \frac{\frac{1}{3} \pm \sqrt{\frac{1}{9} - 4(8)(-\frac{7}{16})}}{16}$

$\boxed{f = \frac{1 \pm \sqrt{337}}{48}}$

(13) $7x^2 + 19x - 6 = 0$ $\quad -42$

$\boxed{x = -3, \frac{2}{7}}$

(14) $h = vt - 16t^2$

$h + 16t^2 = vt$

$\boxed{\frac{h+16t^2}{t} = v}$

(15) $(x-4)^2 = (\sqrt{x^2+5x+6})^2$

$x^2-8x+16 = x^2+5x+6$

$13x-10=0$

$13x=10$

$x=\frac{10}{13}$ No solution check answer!

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

$x^2 = 3-x$

$x^2+x-3=0$

$x=\frac{-1\pm\sqrt{13}}{2}$

(17) $-16t^2+500=0$

$\approx 5.6\text{sec}$

(18) $\left[-\frac{23}{4}, -\frac{1}{4}\right]$

(19) $(-\infty,-6]\cup[9,\infty)$

(20) $(-\infty,-\frac{3}{4})\cup(4,\infty)$

(21) no solution

(22) $(-\infty,-\frac{31}{14}]\cup[-\frac{25}{14},\infty)$

(23) $x=-1,-\frac{17}{3}$

(24) $y=-8$

(25) $\frac{x^{12}}{y^3}$