11.3B HW

Tuesday, May 20, 2014
11:00 AM

p.732) 14-20, 29, 31, 36, 38

(14) $x=1$ (15) $x=-2$ (16) $x=-2$ (17) $x=7$ (18) $\emptyset$

(19) $\emptyset$ (20) $x=12$ (29) $x=2$ is the only solution (31) $\emptyset$ (36) 1986 (38) a) 1.28m b) 0.21m

Solutions

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

$3x-2=x$

$-3x \quad -3x$

$-2=-2x$

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

$\boxed{1=x}$

check!

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

$\sqrt{3-2}=\sqrt{1}$

$\sqrt{1}=\sqrt{1}$

$1=1$ ✓

(15) $(\sqrt{7-2x})^2=(\sqrt{9-x})^2$

$7-2x=9-x$

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

$\boxed{x=-2}$

check!

$\sqrt{7-2(-2)}=\sqrt{9-(-2)}$

$\sqrt{7+4}=\sqrt{11}$

$\sqrt{11}=\sqrt{11}$ ✓

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

$3x+8=x+4$

$\frac{2x}{2}=\frac{-4}{2}$

$\boxed{x=-2}$

check!

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

$\sqrt{-6+8}=\sqrt{2}$

$\sqrt{2}=\sqrt{2}$ ✓

(17) $(\sqrt{9x-30})^2=(\sqrt{4x+5})^2$

$9x-30=4x+5$

$5x=35$

$\boxed{x=7}$

check!

$\sqrt{9(7)-30}=\sqrt{4(7)+5}$

$\sqrt{63-30}=\sqrt{28+5}$

$\sqrt{33}=\sqrt{33}$ ✓

(18) $\sqrt{21-x}-\sqrt{1-x}=0$

$(\sqrt{21-x})^2=(\sqrt{1-x})^2$

$21-x=1-x$

$20 \neq 0$

no real solution

(19) $\sqrt{x-12}-\sqrt{x-8}=0$

$(\sqrt{x-12})^2=(\sqrt{x-8})^2$

$x-12=x-8$

$0 \neq 4$

no real solution

(20) $\sqrt{\frac{1}{2}x-2}-\sqrt{x-8}=0$

$(\sqrt{\frac{1}{2}x-2})^2=(\sqrt{x-8})^2$

$\frac{1}{2}x-2=x-8$

check!

$\sqrt{\frac{1}{2}(12)-2}-\sqrt{12-8}=0$

$\sqrt{4}-\sqrt{4}=0$

(29) check!

$-9=\sqrt{18-7(-9)}$

$-9=\sqrt{18+63}$

$\sqrt{2x-2} = \sqrt{x-8}$

$\frac{1}{2}x - 2 = x - 8$

$\frac{-\frac{1}{2}x}{-\frac{1}{2}} = \frac{-6}{-\frac{1}{2}}$

$x = 12$

$2(12) - 2 - \sqrt{12-8} = 0$

$\sqrt{6-2} - \sqrt{4} = 0$

$\sqrt{4} - \sqrt{4} = 0$

$2 - 2 = 0$

$0 = 0$ ✓

$\sqrt{18 - 7(-1)}$

$-9 = \sqrt{18+63}$

$-9 = \sqrt{81}$

$-9 \neq 9$

$x = -9$ is extraneous

(31) $(\sqrt{x} + 2)^2 = (\sqrt{x-1})^2$

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

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

$x + 4\sqrt{x} + 4 = x - 1$

$\frac{4\sqrt{x}}{4} = \frac{-5}{4}$

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

$x = \frac{25}{16}$

no real solution

check!

$\sqrt{\frac{25}{16}} + 2 = \sqrt{\frac{25}{16} - 1}$

$\frac{5}{4} + 2 = \sqrt{\frac{9}{16}}$

$\frac{5}{4} + \frac{8}{4} = \frac{3}{4}$

$\frac{13}{4} \neq \frac{3}{4}$

(36) $\frac{20}{2.5} = \frac{2.5\sqrt{143-x}}{2.5}$

$8^2 = (\sqrt{143-x})^2$

$64 = 143 - x$

$-79 = -x$

$79 = x$

$\begin{array}{r} 1907 \\ +\ 79 \\ \hline 1986 \end{array}$

(38) a) $5^2 = (\sqrt{19.6d})^2$

$\frac{25}{19.6} = \frac{19.6d}{19.6}$

$1.28m = d$

b) $(5.4)^2 = (\sqrt{19.6d})^2$

$\frac{29.16}{19.6} = \frac{19.6d}{19.6}$

$1.49 = d$

$\begin{array}{r} 1.49 \\ -1.28 \\ \hline .21m \end{array}$