

(38 problems)

Algebra 2 Assignment 26

(New) p. 307- # 5, 7, 9, 15, 19, 23, 25, 31, 33, 39, 43

$$\begin{aligned}
 5. \quad & 3 - (2-y)^{1/2} = 0 \\
 & + (2-y)^{1/2} + (2-y)^{1/2} \\
 & \hline
 & 3 = ((2-y)^{1/2})^2 \\
 & 9 = 2-y \\
 & -2 \quad -2 \\
 & \hline
 & 7 = -y \\
 & -1 \quad -1 \\
 & \hline
 & \boxed{-7 = y}
 \end{aligned}$$

$$\begin{aligned}
 19. \quad & \sqrt[3]{2p+1} = 3^3 \\
 & 2p+1 = 27 \\
 & \hline
 & 2p = 26 \\
 & \frac{2}{2} \quad \frac{26}{2} \\
 & \hline
 & \boxed{p = 13}
 \end{aligned}$$

$$\begin{aligned}
 23. \quad & \sqrt{2x-9} = -\frac{1}{3} \quad \leftarrow \text{won't be equal to a negative} \\
 & \boxed{\text{No Solution}}
 \end{aligned}$$

$$\begin{aligned}
 7. \quad & \sqrt{a-4} - 3 = 0 \\
 & +3 \quad +3 \\
 & \hline
 & \sqrt{a-4} = 3^2 \\
 & a-4 = 9 \\
 & +4 \quad +4 \\
 & \hline
 & \boxed{a = 13}
 \end{aligned}$$

$$\begin{aligned}
 25. \quad & 3 + \sqrt{4n-5} = 10 \\
 & -3 \quad -3 \\
 & \hline
 & \sqrt{4n-5} = 7^2 \\
 & 4n-5 = 49 \\
 & +5 \quad +5 \\
 & \hline
 & 4n = 54 \\
 & \frac{4}{4} \quad \frac{54}{4} \\
 & \hline
 & \boxed{n = \frac{54}{4}}
 \end{aligned}$$

$$\begin{aligned}
 9. \quad & \sqrt[3]{y+1} = 2^3 \\
 & y+1 = 8 \\
 & -1 \quad -1 \\
 & \hline
 & \boxed{y = 7}
 \end{aligned}$$

$$\begin{aligned}
 31. \quad & \sqrt{2r-6} = \sqrt{3+r}^2 \\
 & 2r-6 = 3+r \\
 & -r \quad -r \\
 & \hline
 & r-6 = 3 \\
 & +6 \quad +6 \\
 & \hline
 & \boxed{r = 9}
 \end{aligned}$$

$$\begin{aligned}
 15. \quad & \sqrt{Q} - 8 = 0 \\
 & +8 \quad +8 \\
 & \hline
 & \sqrt{Q} = 8^2 \\
 & \boxed{Q = 64}
 \end{aligned}$$

Asmt 26 ~ Continued

$$37. \sqrt{4x+1}^2 = (3 + \sqrt{4x-2})^2$$

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

$$4x+1 = 9 + 3\sqrt{4x-2} + 3\sqrt{4x-2} + 4x-2$$

$$4x+1 = 4x+7 + 6\sqrt{4x-2}$$

$$\begin{array}{r} -4x-7 \\ -4x-7 \hline \end{array}$$

$$\frac{-6}{6} = \frac{6\sqrt{4x-2}}{6}$$

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

No Solution

$$39. \sqrt{a+1}^2 = (\sqrt{a+6} - 1)^2$$

$$a+1 = (\sqrt{a+6} - 1)(\sqrt{a+6} - 1)$$

$$a+1 = a+6 - \sqrt{a+6} - \sqrt{a+6} + 1$$

$$a+1 = a+7 - 2\sqrt{a+6}$$

$$\begin{array}{r} -a-7 \\ -a-7 \hline \end{array}$$

$$\frac{-6}{-2} = \frac{-2\sqrt{a+6}}{-2}$$

$$3 = \sqrt{a+6}$$

$$\begin{array}{r} 9 = a+6 \\ -6 \quad -6 \hline \end{array}$$

3 = a

$$43. T = 2\pi \sqrt{\frac{l}{g}} \text{ solve for } l$$

$$\frac{T}{2\pi} = \frac{2\pi}{2\pi} \sqrt{\frac{l}{g}}$$

$$\left(\frac{T}{2\pi}\right)^2 = \sqrt{\frac{l}{g}}^2$$

$$g \cdot \frac{T^2}{4\pi^2} = \frac{l}{g} \cdot g$$

$$\boxed{\frac{gT^2}{4\pi^2} = l}$$

REVIEW (packet)

1. Solve by substitution:

$$7x + y = 9 \rightarrow y = 9 - 7x$$

$$5x - y = 15$$

$$5x - (9 - 7x) = 15$$

$$5x - 9 + 7x = 15$$

$$12x - 9 = 15$$

$$\begin{array}{r} 12x - 9 = 15 \\ +9 \quad +9 \hline 12x = 24 \\ \frac{12}{12} \quad \frac{12}{12} \end{array}$$

x = 2

$$y = 9 - 7(2)$$

$$y = 9 - 14$$

$$y = -5$$

(2, -5)

Asmt 26 - continued

Factor:

$$2. 2y^2 - 242 = 2(y^2 - 121) = \boxed{2(y+11)(y-11)}$$

$$3. \frac{8ax - 6x - 12a + 9}{2x(4a-3) - 3(4a-3)} = \boxed{(2x-3)(4a-3)}$$

Simplify:

$$4. 27^{-\frac{4}{3}} = \left(\frac{1}{27}\right)^{\frac{4}{3}} = \left(\sqrt[3]{\frac{1}{27}}\right)^4 = \left(\frac{1}{3}\right)^4 = \frac{1}{3^4} = \boxed{\frac{1}{81}}$$

$$5. \left(\frac{1}{8}\right)^{-\frac{2}{3}} = 8^{\frac{2}{3}} = \sqrt[3]{8^2} = 2^2 = \boxed{4}$$

6. Express using rational exponents:

$$\frac{x^3 y}{y^{1/2} x^{1/3}} = x^{3-1/3} y^{1-1/2} = x^{\frac{9}{3}-\frac{1}{3}} y^{\frac{2}{2}-\frac{1}{2}} = \boxed{x^{8/3} y^{1/2}}$$

7. Express in simplest radical form:

$$x^{\frac{2}{3}} x^{\frac{1}{5}} = x^{\frac{5}{5} \cdot \frac{2}{3}} x^{\frac{3}{3} \cdot \frac{1}{5}} = x^{\frac{10}{15}} x^{\frac{3}{15}} = x^{\frac{13}{15}} = \boxed{\sqrt[15]{x^{13}}}$$

BOOK p 887 (5-5)

$$16. \sqrt[5]{p^{25} q^{15} r^5 s^{20}} = \boxed{p^5 q^3 r s^4}$$

$$23. \sqrt{9a^2 + 6a + 1} = \sqrt{(3a+1)(3a+1)} = \sqrt{(3a+1)^2} = \boxed{3a+1}$$

p 887 (5-6)

$$8. \sqrt[3]{\frac{32}{48}} + \sqrt[3]{\frac{500}{125}} = 4 \cdot \sqrt[3]{\frac{1}{12}} + 5 \sqrt[3]{\frac{1}{125}} = 8 \sqrt[3]{\frac{1}{12}} + 5 \sqrt[3]{\frac{1}{125}} = \boxed{13 \sqrt[3]{\frac{1}{12}}}$$

Asmt 26 Continued

$$9. \sqrt{12} \cdot \sqrt{27} = \sqrt{12 \cdot 27} = 3 \cdot 2 \cdot 3 = \boxed{18}$$

$$12. \sqrt{3}(5\sqrt{2} + 4\sqrt{7}) = 5\sqrt{2 \cdot 3} + 4\sqrt{7 \cdot 3} = \boxed{5\sqrt{6} + 4\sqrt{21}}$$

$$15. (2 + \sqrt{5})(2 - \sqrt{5}) = 4 + 2\sqrt{5} - 2\sqrt{5} - 5 = \boxed{-1}$$

$$17. (8 + \sqrt{11})^2 = (8 + \sqrt{11})(8 + \sqrt{11}) = 64 + 8\sqrt{11} + 8\sqrt{11} + 11 = \boxed{75 + 16\sqrt{11}}$$

$$20. \frac{\sqrt{18}}{\sqrt{32}} = \sqrt{\frac{18}{32}} = \sqrt{\frac{9}{16}} = \boxed{\frac{3}{4}}$$

P314

$$8. (4i)(-3i) = -12i^2 = -12(-1) = \boxed{12}$$

$$20. -\sqrt{169} = i\sqrt{169} = i \cdot 13 = \boxed{13i}$$

$$26. (2i)^2 = 4i^2 = 4(-1) = \boxed{-4}$$

$$32. \sqrt{-5} \cdot \sqrt{20} = i\sqrt{5} \cdot \sqrt{20} = i\sqrt{100} = \boxed{10i}$$

$$46. (3-4i)^2 = (3-4i)(3-4i) = 9 - 12i - 12i + 16i^2 = 9 - 24i - 16 = \boxed{-7 - 24i}$$

P320

$$24. (4+6i)(4-6i) = 16 - 36i^2 = 16 + 36 = \boxed{52}$$

$$28. (8-2i)(8+2i) = 64 - 4i^2 = 64 + 4 = \boxed{68}$$

$$30. \frac{(11+i)(2+i)}{(2-i)(2+i)} = \frac{22 + 11i + 2i + i^2}{4 - i^2} = \frac{21 + 13i}{5}$$

$$36. \frac{(1-i)(4+5i)}{(4-5i)(4+5i)} = \frac{4 + 5i - 4i - 5i^2}{16 + 25i^2} = \frac{9+i}{41}$$

$$52. \left(\frac{\sqrt{3}}{2+3i}\right)^2 = \frac{\sqrt{3}^2}{(2+3i)(2+3i)} = \frac{3}{4+12i+9i^2} = \frac{3}{-5+12i} \cdot \frac{-5-12i}{-5-12i} = \frac{-15-36i}{25+144i^2} = \boxed{\frac{-15-36i}{169}}$$