

$$68. i^{26} = i^{4 \cdot 6 + 2} = (i^4)^6 \cdot i^2 \\ (+1)^6 (-1) = -1$$

$$70. i^{48} = i^{4 \cdot 12} = i^{4 \cdot 4 \cdot 3} = ((i^4)^3) = (1)^3 = 1$$

$$76. i^{-17} = \frac{1}{i^{4 \cdot 4 + 1}} = \frac{1}{1 \cdot i} = \frac{1}{i}$$

8.3 Smp RadExp

41-53 odd 61-81 even

87 89 91 93 97

110 112

$$41. \sqrt{288} = \sqrt{2} \sqrt{144} = 12\sqrt{2}$$

$$43. -\sqrt{32} = -\sqrt{16} \sqrt{2} = -4\sqrt{2}$$

$$45. -\sqrt{28} = -\sqrt{4} \sqrt{7} = -2\sqrt{7}$$

$$47. \sqrt{30}$$

$$49. \sqrt[3]{128} = 2^{7/3} = 2^{6/3} \cdot 2^{1/3} = 4\sqrt[3]{2}$$

4.32.

4.4.8

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$$51. \sqrt[3]{-16} = \sqrt[3]{-1} \sqrt[3]{2^4} = (-1)(2) \sqrt[3]{2} = -2\sqrt[3]{2}$$

$$53. \sqrt[3]{40} = \sqrt[3]{2^3 \cdot 5} = 2\sqrt[3]{5}$$

$$61. \sqrt{72k^2} \sqrt{36k^2} \sqrt{2} = 6k\sqrt{2}$$

$\begin{array}{c} 9 \quad 8 \\ \swarrow \quad \searrow \\ 4 \quad 2 \end{array}$

$$65. \sqrt{121x^6} = \sqrt{11^2 x^6} = 11x^3$$

$$69. -\sqrt{100m^8z^4} = -\sqrt{10^{2(1)} 2^2(4)} z^{2(2)} = -10m^4z^2$$

$$73. \sqrt[4]{\frac{1}{16} r^8 t^{20}} = \sqrt[4]{\frac{1}{2^{4(1)}} r^{2 \cdot 4} t^{5 \cdot 4}} = \frac{r^2 t^5}{2}$$

$$77. -\sqrt{500r^{11}} = -\sqrt{100r^{2(5)+1}} \sqrt{5} = -10r^5\sqrt{5r}$$

$$81. \sqrt[3]{8z^6w^9} = \sqrt[3]{2^3 z^{3 \cdot 2} w^{3 \cdot 3}} = 2z^2w^3$$

$$87. -\sqrt[4]{162r^{15}s^{10}} = -\sqrt[4]{3^4 \cdot 2 \cdot r^{4 \cdot 3+3} s^{4 \cdot 2+2}} = -\sqrt[4]{3^4 \cdot 2 \cdot (r^3)^4 \cdot r^3 \cdot (s^2)^4 \cdot s^2} = -3r^3s^2\sqrt[4]{2r^3s^2}$$

$$89. \sqrt{\frac{y^{11}}{36}} = \sqrt{\frac{(y^2)^5 y}{6^2}} = \frac{y^5}{6} \sqrt{y}$$

$$91. \sqrt[3]{\frac{x^{16}}{27}} = \sqrt[3]{\frac{(x^3)^5 x}{3^3}} = \frac{x^5}{3} \sqrt[3]{x}$$

$$93. \sqrt[4]{48^2} = 48^{2/4} = 48^{1/2} = \sqrt{16} \cdot \sqrt{3} = 4\sqrt{3}$$

$$97. x^{25/10} = x^{5/2} = x^{4/2 + 1/2} = x^2 \sqrt{x}$$

$$* 110. (8, 13) \& (2, 5)$$

Dist
from

$$\sqrt{(8-2)^2 + (13-5)^2} = \sqrt{6^2 + 8^2} = 10$$

$$112. (-1, 5) \& (-7, 7) = \sqrt{(-1+7)^2 + (5-7)^2} = \sqrt{\underset{3^2+1^2}{6^2+2^2}}$$

$$\sqrt{36+4}$$

$$2\sqrt{10}$$