

8.2 #9

$$8m^2 - 2m = 7$$

$$8m^2 - 2m - 7 = 0$$

$$a = 8, b = -2, c = -7$$

$$\begin{aligned} b^2 - 4ac &= (-2)^2 - 4(8)(-7) \\ &= 4 + 224 \\ &= 228 \end{aligned}$$

$$\begin{aligned} \Rightarrow \sqrt{228} &= \sqrt{2 \cdot 2 \cdot 57} \\ &= 2\sqrt{57} \end{aligned}$$

$$\begin{aligned} x &= \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-(-2) \pm 2\sqrt{57}}{2(8)} = \frac{2 \pm 2\sqrt{57}}{2(8)} \\ &= \frac{\cancel{2}(1 \pm \sqrt{57})}{\cancel{2}(8)} = \frac{1 \pm \sqrt{57}}{8} \end{aligned}$$

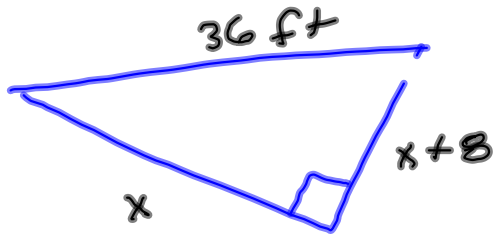
Another  
one, similar



$$\frac{2 \pm 4\sqrt{57}}{16} = \frac{\cancel{2}(1 \pm 2\sqrt{57})}{\cancel{16}^8} = \frac{1 \pm 2\sqrt{57}}{8}$$

$$\begin{array}{r} 2 \overline{) 228} \\ \underline{2} \phantom{0} \\ 0 \phantom{0} \\ 2 \overline{) 114} \\ \underline{2} \phantom{0} \\ 0 \phantom{0} \\ 57 \end{array}$$

8.2 # 51



How much distance is saved by cuttin' the corner?

$$x^2 + (x+8)^2 = 36^2$$

$$x^2 + x^2 + 16x + 64 = 1296$$

$$2x^2 + 16x - 1232 = 0$$

$$x^2 + 8x - 616 = 0$$

$$a=1, b=8, c=-616$$

$$b^2 - 4ac = 8^2 - 4(1)(-616)$$

$$= 64 + 2464$$

$$= 2528$$

$$\sqrt{2528} = 2 \cdot 2 \sqrt{158} = 4\sqrt{158}$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-8 \pm 4\sqrt{158}}{2(1)} =$$

$$\frac{-4 \pm 2\sqrt{158}}{1} = -4 \pm 2\sqrt{158}$$

only want the positive one.

$$x \approx 21.13961018$$

So <sup>long way!</sup>  $x + x+8 \approx 50.27922 \approx 50$  Savings

o Distance saved is  $50 - 36 = 14$  ft.

short way

$$\begin{array}{r} 2 \overline{) 2528} \\ \underline{4} \\ 2128 \\ \underline{4256} \\ 158 \\ \underline{158} \\ 0 \end{array}$$

Test 6 #6

$$\frac{\sqrt[3]{y^2}}{\sqrt[7]{y}} \cdot \frac{\sqrt[7]{y^6}}{\sqrt[7]{y^6}}$$

waste of time

LCD = 21

$$\frac{2}{3} \cdot \frac{7}{7} - \frac{1}{7} \cdot \frac{3}{3} = \frac{14-3}{21}$$

$$\frac{y^{\frac{2}{3}}}{y^{-\frac{1}{7}}} = y^{\frac{2}{3} - \frac{1}{7}} = y^{\frac{11}{21}} = \sqrt[21]{y^{11}} = \frac{11}{21}$$

LCD = 2 \cdot 7 \cdot 5

$$\frac{2}{2 \cdot 7} - \frac{3}{2 \cdot 5} = \frac{2}{2 \cdot 7} \cdot \frac{5}{5} - \frac{3}{2 \cdot 5} \cdot \frac{7}{7} = \frac{10-21}{70} = -\frac{11}{70}$$

#8

$$(a-b)^2 = a^2 - 2ab + b^2$$

$$\frac{\sqrt{2} - \sqrt{3}}{\sqrt{2} + \sqrt{3}}$$

$$\cdot (a+b)(a-b) = a^2 - b^2$$

$$= \left( \frac{\sqrt{2} - \sqrt{3}}{\sqrt{2} + \sqrt{3}} \right) \left( \frac{\sqrt{2} - \sqrt{3}}{\sqrt{2} - \sqrt{3}} \right) = \frac{(\sqrt{2})^2 - 2\sqrt{2}\sqrt{3} + (\sqrt{3})^2}{(\sqrt{2})^2 - (\sqrt{3})^2}$$

$$= \frac{2 - 2\sqrt{6} + 3}{2 - 3} = \frac{5 - 2\sqrt{6}}{-1} = 2\sqrt{6} - 5$$

$$\frac{\sqrt{x} - 1}{(2 - 5)^2} = \sqrt{x-7}$$

$$(a-b)^2 = a^2 - 2ab + b^2$$

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

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

$$a^2 - 2ab + b^2$$

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

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

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

$$\sqrt{x} = \frac{8}{2} = 4$$

$$\sqrt{x} = 4$$

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

$$x = 16$$

$$\frac{\sqrt{189 x^5 y^6}}{\sqrt{3 y^4}} = \sqrt{\frac{189 x^5 y^6}{3 y^4}}$$

$$\begin{array}{l} 3 \sqrt{63} \\ 3 \sqrt{21} \\ 7 \end{array}$$

$$= \sqrt{63 x^5 y^{6-4}} = \sqrt{63 x^5 y^2}$$

$$\sqrt{3 \cdot 3 \cdot 7 \cdot x \cdot x \cdot x \cdot x \cdot x \cdot y \cdot y} = 3 \cdot x \cdot x \cdot y \sqrt{7x} = 3x^2y\sqrt{7x}$$

$$\sqrt{3^2 \cdot 7 \cdot x^4 \cdot x^1 \cdot y^2} = 3x^2y\sqrt{7x}$$

$$3^{\frac{2}{2}} x^{\frac{4}{2}} y^{\frac{2}{2}} \sqrt{7x}$$

$$\sqrt[3]{\frac{x^9}{216y^{12}}} = \sqrt[3]{\frac{x^9}{2^3 \cdot 3^3 \cdot y^{12}}}$$

$$\frac{x^{\frac{9}{3}}}{2^{\frac{3}{3}} \cdot 3^{\frac{3}{3}} \cdot y^{\frac{12}{3}}} = \frac{x^3}{2 \cdot 3 \cdot y^4} = \frac{x^3}{6y^4}$$

$$\begin{array}{r} 2 \overline{) 216} \\ 2 \overline{) 108} \\ 2 \overline{) 54} \\ 3 \overline{) 27} \\ 3 \overline{) 9} \\ 3 \end{array}$$