Unit Test # 1

$\Rightarrow$ Avg. : 71%

2. $\left(\sqrt[3]{x}\right)^2 \left(\sqrt[8]{x^3}\right)$

$\left(x^{1/3}\right)^2 \left(x^3\right)^{1/8}$

$x^{2/3} \cdot x^{3/8}$

$= x^{25/24}$

$\frac{2}{3} + \frac{3}{8}$

$\frac{16 + 9}{24}$

3. 10 ft.

B ← x → C
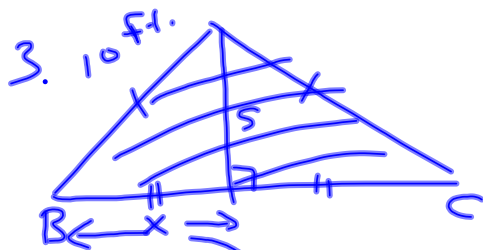
$x^2 = 10^2 - 5^2$

$x^2 = 75$

$x = \sqrt{75}$

$\boxed{x = 5\sqrt{3}}$

$5\sqrt{3} \times 2$

$\boxed{= 10\sqrt{3}}$

(b) $A = \frac{1}{2} bh$

$A = \frac{1}{2} \left(10\sqrt{3} \right) 5$

$\underline{A = 25\sqrt{3} \; ft.^2}$

4. Expand and simplify the following radical expression:

$$(1 - 5\sqrt{27})(1 - 5\sqrt{27})$$

$$3\sqrt{6}(\sqrt{2} - 5\sqrt{3}) - (4 - \sqrt{12})(\sqrt{2} + 7\sqrt{3}) + (1 - 5\sqrt{27})^2$$

$$= 3\sqrt{12} - 15\sqrt{18} - \left(4\sqrt{2} + 28\sqrt{3} - \sqrt{24} - 7\sqrt{36}\right) + \left(1 - 10\sqrt{27} + 25(27)\right)$$

$$= 6\sqrt{3} - 45\sqrt{2} - 4\sqrt{2} - 28\sqrt{3} + 2\sqrt{6} + 7(6) + 1 - 30\sqrt{3} + 675$$

$$\underset{42}{}$$

$$= 2\sqrt{6} - 52\sqrt{3} - 49\sqrt{2} + 718$$

5. Simplify the following expression. Express your solution using all positive exponents: [6]

$$\frac{(-2x^5y)^3(2x^{-7}y^4)^{-3}}{(-3xy^8)^2(27x^{-6}y^3)^{-\frac{2}{3}}}$$

$$= \frac{(-2x^5y)^3\left(27x^{-6}y^3\right)^{2/3}}{(-3xy^8)^2\left(2x^{-7}y^4\right)^3}$$

$$= \frac{\left(-8x^{15}y^3\right)\left(9x^{-4}y^2\right)}{\left(9x^2y^{16}\right)\left(8x^{-21}y^{12}\right)}$$

$$= \frac{-72x^{11}y^5}{72x^{-19}y^{28}}$$

$$= -1x^{30}y^{-23}$$

$$= -\frac{x^{30}}{y^{23}}$$

6. Use your knowledge of exponents to evaluate the following expression without the aid of a calculator.

[6]

$$\left(\frac{2}{3}\right)^{-2} + 6w^0 - \frac{2}{16^{-\frac{3}{4}}} + \sqrt[3]{125} - \left(\frac{81}{16}\right)^{\frac{1}{2}} + (25 - 9)^{\frac{1}{2}}$$

$$= \left(\frac{3}{2}\right)^2 + 6(1) - 2(16)^{3/4} + 5 - \frac{9}{4} + 16^{1/2}$$

$$\sqrt{a^2 - b^2} \neq a - b$$

$$= \frac{9}{4} + 6 - 16 + 5 - \frac{9}{4} + 4$$

$$= -1$$