Let's Review:

- Simplifying Radicals
- Pythagoras Theorem
- Basic Trigonometric Properties

Radical Review

Simplify

$$\sqrt{12}$$

$$\sqrt{2 \cdot 2 \cdot 3}$$

$$2\sqrt{3}$$

$$5\sqrt{27}$$

$$5\sqrt{3 \cdot 3 \cdot 3}$$

$$15\sqrt{3}$$

$$5\sqrt{8} + 4\sqrt{18}$$

$$5\sqrt{2 \cdot 2 \cdot 2} + 4\sqrt{3 \cdot 3 \cdot 2}$$

$$10\sqrt{2} + 12\sqrt{2}$$

$$22\sqrt{2}$$

Radicals

① $5\sqrt{3} + \sqrt{3} = 6\sqrt{3}$

② $5\sqrt{3} + \sqrt{2}$

③ $10\sqrt{2} - 8\sqrt{2} = 2\sqrt{2}$

④ $2\sqrt{3} \cdot 5\sqrt{2} = 10\sqrt{6}$

⑤ $\sqrt{3} \cdot 5 = 5\sqrt{3}$

⑥ $2\sqrt{3} \cdot 5\sqrt{3} = 10\sqrt{9} = 10(3) = 30$

Rationalizing the Denominator
(Get rid of the radical)

$$\frac{5}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{5\sqrt{2}}{\sqrt{4}} = \boxed{\frac{5\sqrt{2}}{2}}$$

$$\frac{8\sqrt{2}}{6\sqrt{8}} \cdot \frac{\sqrt{8}}{\sqrt{8}} = \frac{8\sqrt{16}}{6\sqrt{64}}$$

$$= \frac{8(4)}{6(8)}$$

$$= \frac{32}{48}$$

$$\boxed{= \frac{2}{3}}$$

Think Conjugates!

$$\frac{(8 - \sqrt{2})(2 + \sqrt{5})}{(2 - \sqrt{5})(2 + \sqrt{5})}$$

Conjugate

$$1 + \sqrt{5} \rightarrow 1 - \sqrt{5}$$

$$1 - \sqrt{5} \rightarrow 1 + \sqrt{5}$$
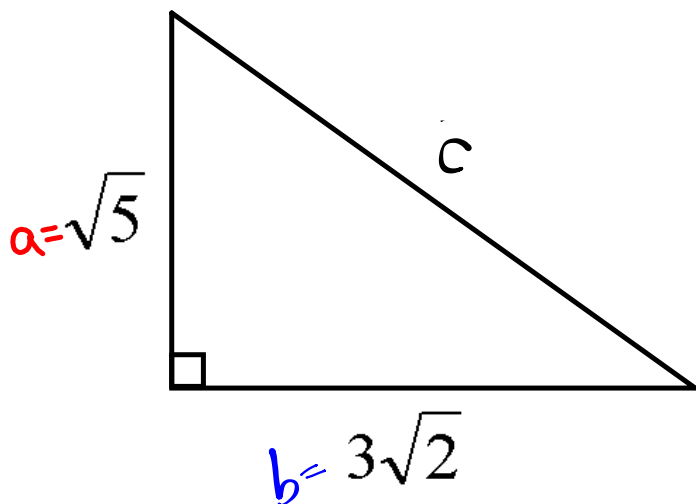
$$-1 + \sqrt{3} \rightarrow -1 - \sqrt{3}$$

$$\frac{16 + 8\sqrt{5} - 2\sqrt{2} - \sqrt{10}}{4 + 2\sqrt{5} - 2\sqrt{5} - 5}$$

$$\frac{16 + 8\sqrt{5} - 2\sqrt{2} - \sqrt{10}}{-1}$$

$$\boxed{-16 - 8\sqrt{5} + 2\sqrt{2} + \sqrt{10}}$$

Think Pythagorean Theorem!

Determine the length of the idicated side!

$(\sqrt{5})(\sqrt{5}) = \sqrt{25} = 5$

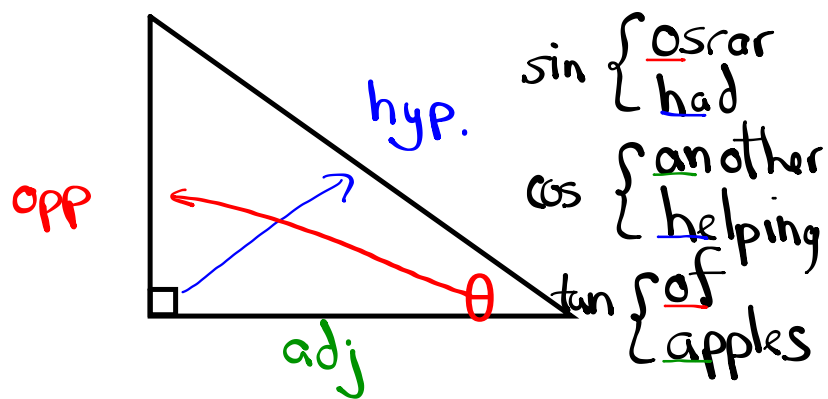$(3\sqrt{2})(3\sqrt{2}) = 9\sqrt{4} = 9(2) = 18$

$a^2 + b^2 = c^2$

$(\sqrt{5})^2 + (3\sqrt{2})^2 = c^2$

$5 + 18 = c^2$

$23 = c^2$

$\sqrt{23} = c$

$a = \sqrt{5}$

$b = 3\sqrt{2}$

c

Trigonometric Ratios

sin { Oscar had

cos { another helping

tan { of apples

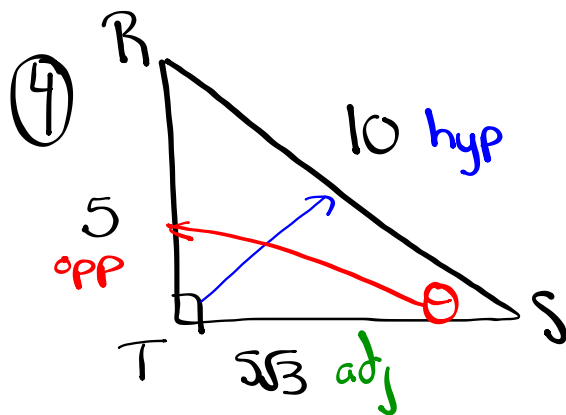hyp.

opp

adj

θ

$\sin \theta = \dfrac{\text{opp}}{\text{hyp}}$ $\cos \theta = \dfrac{\text{adj}}{\text{hyp}}$ $\tan \theta = \dfrac{\text{opp}}{\text{adj}}$

$\csc \theta = \dfrac{\text{hyp}}{\text{opp}}$ $\sec \theta = \dfrac{\text{hyp}}{\text{adj}}$ $\cot \theta = \dfrac{\text{adj}}{\text{opp}}$

cosecant   secant   cotangent

Homework

④

R

10 hyp

5
opp

T   5√3 adj   S

$$\sin \theta = \frac{5}{10} = \frac{1}{2}$$

$$\cos \theta = \frac{5\sqrt{3}}{10} = \frac{1\sqrt{3}}{2}$$

$$a^2 + b^2 = c^2$$

$$(5)^2 + b^2 = (10)^2$$

$$25 + b^2 = 100$$

$$b^2 = 75$$

$$b = \sqrt{75}$$

$$b = \sqrt{5 \cdot 5 \cdot 3}$$

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

Attachments

Trig&3SpaceCourseOutline.doc