

<sup>21, 1b, 25, 13-tan</sup>  
**Questions over HW?**  

$$\tan(325-86) = \frac{\tan 325 - \tan 86}{1 + \tan 325 \tan 86}$$

$$\tan(239^\circ)$$

Nov 7-3:30 PM

**WARM UP**  
 Simplify the following expression using a formula from last night's homework.  

$$\sin(2u) = \sin(u+u) = \sin u \cos u + \sin u \cos u$$

$$= 2 \sin u \cos u$$

$$\cos(2u) = \cos^2 u - \sin^2 u$$

$$= 1 - 2 \sin^2 u$$

$$= 2 \cos^2 u - 1$$

$$\tan(2u) = \frac{2 \tan u}{1 - \tan^2 u}$$

p. 387

Nov 8-2:59 PM

**Example** p. 394, #4  
 Solve; state the answers from 0 to 2pi.  

$$\sin 2x + \cos x = 0$$

$$2 \sin x \cos x + \cos x = 0$$

$$\cos x (2 \sin x + 1) = 0$$

$$\cos x = 0 \quad 2 \sin x + 1 = 0$$

$$\sin x = -\frac{1}{2}$$

$$x = \frac{\pi}{2} \quad x = \frac{3\pi}{2} \quad x = \frac{7\pi}{6} \quad x = \frac{11\pi}{6}$$

p. 394, #3 (HW)

Nov 8-3:13 PM

Find  $\tan(2u)$  using a double-angle formula. The following is given:  

$$\csc u = 3 \quad \frac{\pi}{2} < u < \pi$$

$$\sin u = \frac{1}{3}$$

$$\tan(2u) = \frac{2 \tan u}{1 - \tan^2 u} = \frac{2(-\frac{1}{\sqrt{8}})}{1 - (-\frac{1}{\sqrt{8}})^2}$$

$$= \frac{-\frac{2}{\sqrt{8}}}{1 - \frac{1}{8}} = \frac{-\frac{2}{\sqrt{8}}}{\frac{7}{8}} = \frac{-2}{\sqrt{8}} \cdot \frac{8}{7} = \frac{-16}{7\sqrt{8}}$$


p. 394, #15 (HW)

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**POWER-REDUCING FORMULAS**

$$\sin^2 u = \frac{1 - \cos(2u)}{2}$$

$$\cos^2 u = \frac{1 + \cos(2u)}{2}$$

$$\tan^2 u = \frac{1 - \cos(2u)}{1 + \cos(2u)}$$


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Rewrite the expression in terms of the first power of cosine.

$$\begin{aligned} \sin^4 x &= \sin^2 x \cdot \sin^2 x \\ &= \left(\frac{1 - \cos(2x)}{2}\right) \left(\frac{1 - \cos(2x)}{2}\right) \\ &= \frac{1}{4} (1 - \cos(2x) - \cos(2x) + \cos^2(2x)) \\ &= \frac{1}{4} (1 - 2\cos(2x) + \cos^2(2x)) \\ &= \frac{1}{4} \left(\frac{2 - 4\cos(2x)}{2} + \frac{1 + \cos(4x)}{2}\right) \\ &= \frac{1}{8} (2 - 4\cos(2x) + 1 + \cos(4x)) \\ &= \frac{1}{8} (3 - 4\cos(2x) + \cos(4x)) \end{aligned}$$

p. 394, #23 (HW)

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**HOMEWORK**  
 ...be memorizing these formulas

**5.5a (p. 394):** 1-29 (odd), omit 9 & 27

5.4-5.5 Quiz on Tuesday (Take home)  
 It will need to be back to me by 8:15 am on Monday Oct. 20  
 No excuses ;)

Nov 8-3:45 PM

**PROOF THAT GIRLS ARE EVIL**

First we state that girls require time and money:  
 $Girls = Time \times Money$   
 And as we all know "Time is Money"  
 $Time = Money$   
 Therefore:  
 $Girls = Money \times Money = (Money)^2$   
 And because "Money is The Root of All Evil"  
 $Money = \sqrt{Evil}$   
 Therefore:  
 $Girls = (\sqrt{Evil})^2$   
 And we are forced to conclude that:  
 $Girls = Evil$

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Power-Reducing Formulas for Sine and Cosine:

Substitute  $u=x/2$

Nov 11-4:36 PM

**Example**

Use a half-angle formula to determine the exact value of  $\sin(22^\circ 30')$ .

p. 395, #41 (HW)

Nov 11-5:00 PM

**Example**

Find the exact value of  $\sin(u/2)$  if  $\sin(u)=5/13$  and  $\frac{\pi}{2} < u < \pi$

p. 395, #49 (HW)

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**HOMEWORK**

...aaaaand that's a wrap!

**5.5b (p. 394):** 33-53 (every other odd)

5.4-5.5 Quiz on Thursday

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Solve in the interval  $[0, 2\pi)$

$$\sin\left(\frac{x}{2}\right) + \cos x - 1 = 0$$

p. 395, #57 (HW)

### Countdown to Thanksgiving Break!

**This week**

M: 5.5b

T: Quiz Review

W: Quiz (5.4-5.5)

R: 6.1

F: 6.1

**Next week**

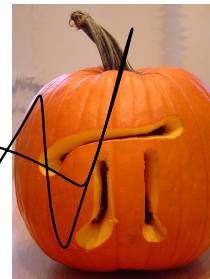
M: 6.2a

T: 6.2b

W: No School!

R: Thanksgiving!

F: Black Friday!



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Nov 11-4:30 PM