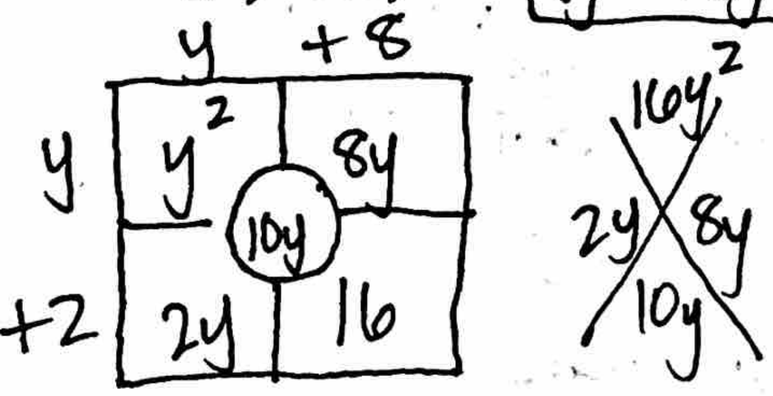
Final Exam Study Guide Answer key **Chapter 4**

I. Factoring. Factor each completely.

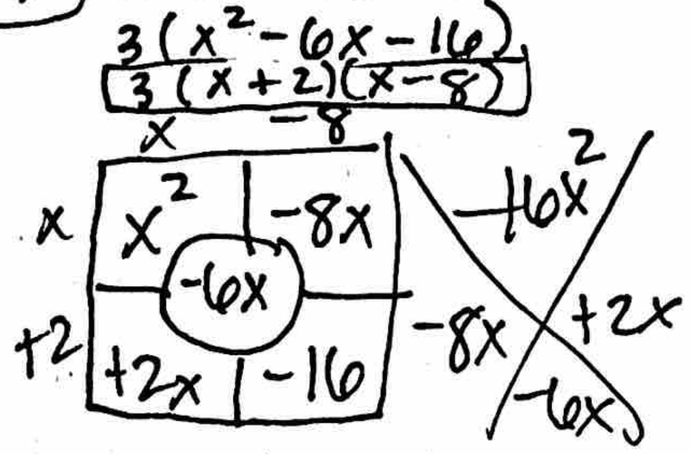
1. $y^2+10y+16$ $(y+8)(y+2)$



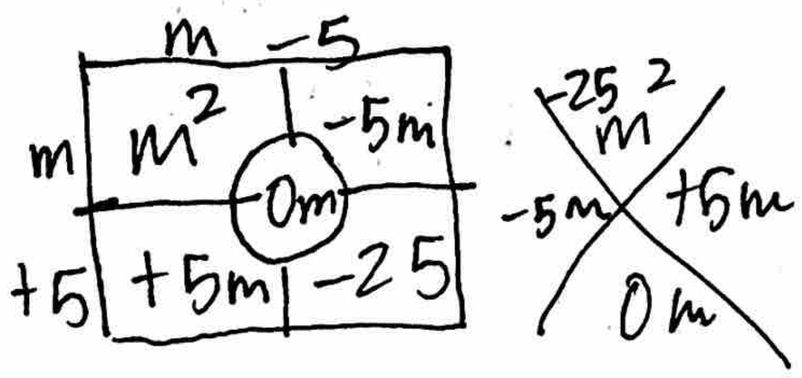
2. $3x^2-18x-48$

$3(x^2-6x-16)$

$3(x+2)(x-8)$



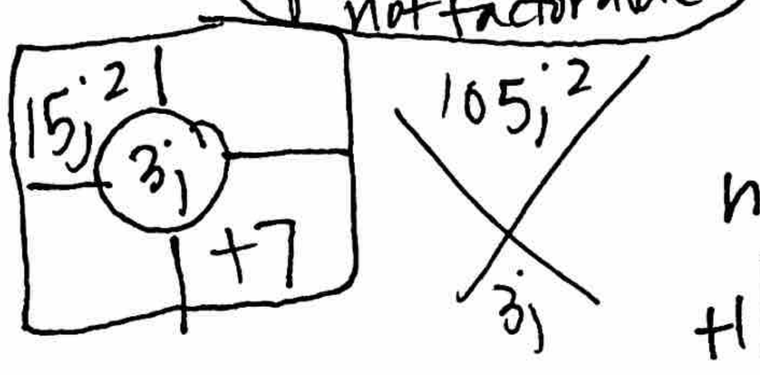
3. m^2-25 $(m+5)(m-5)$



4. $14m^3n^2+21m^2n$

$7m^2n(2mn+3)$

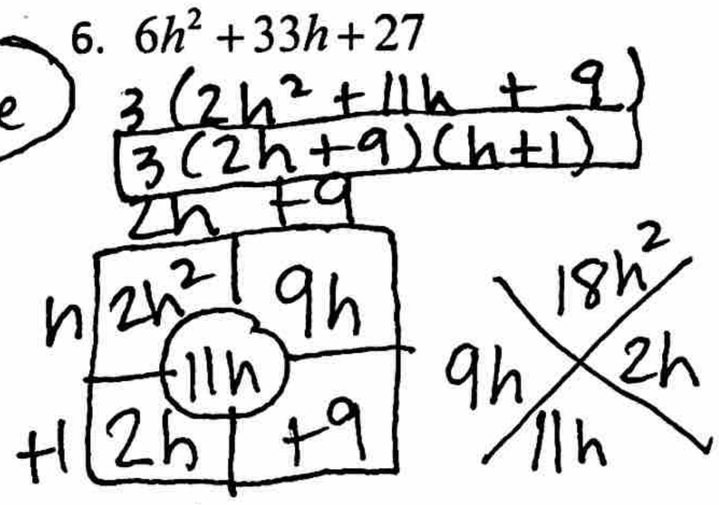
5. $15j^2+3j+7$ prime; not factorable



6. $6h^2+33h+27$

$3(2h^2+11h+9)$

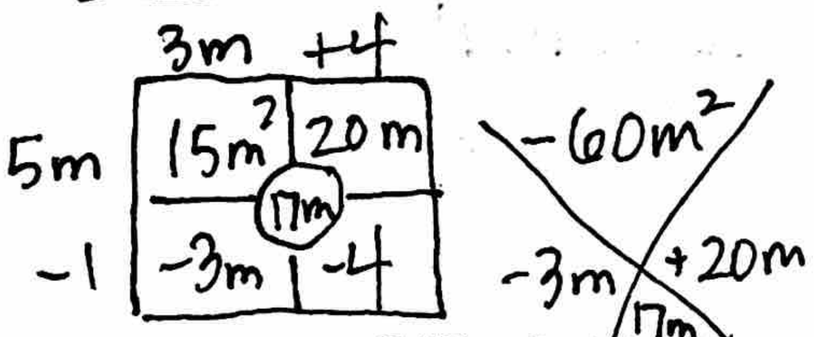
$3(2h+9)(h+1)$



7. $30m^2y+34my-8y$

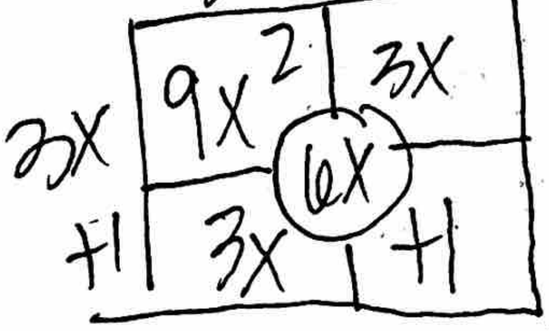
$2y(15m^2+17m-4)$

$2y(5m-1)(3m+4)$



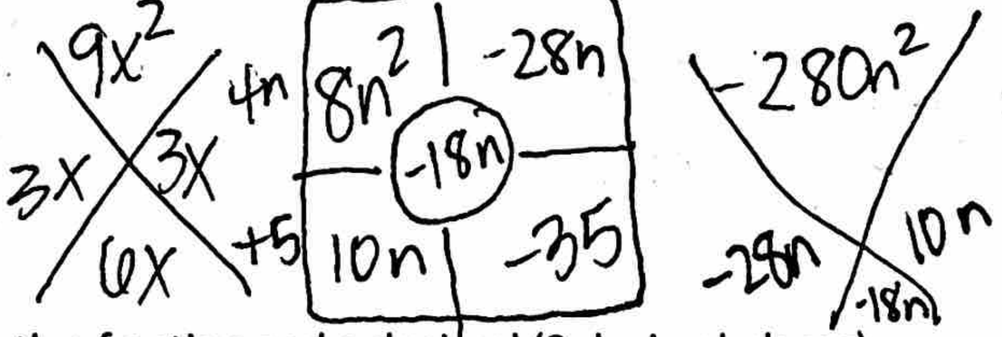
8. $9x^2+6x+1$

$(3x+1)^2$

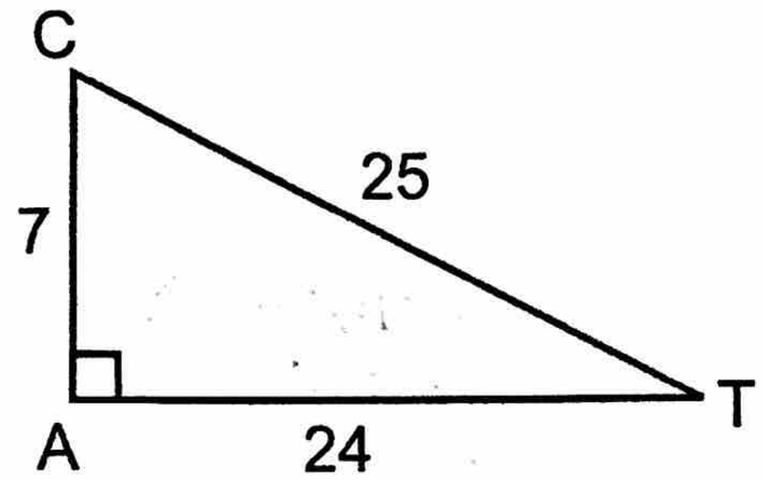


9) $8n^2-18n-35$

$(4n+5)(2n-7)$



10. Use $\triangle CAT$ to find the given trig ratios. Write each ratio as both a fraction and a decimal (3 decimal places).



$\sin C = \frac{24}{25} = 0.960$ $\sin T = \frac{7}{25} = 0.280$

$\cos C = \frac{7}{25} = 0.280$ $\cos T = \frac{24}{25} = 0.960$

$\tan C = \frac{24}{7} \approx 3.423$ $\tan T = \frac{7}{24} \approx 0.292$

11. Write the inverse statement for all 6 trig ratios above. Find angle C and angle T using the inverse trig statements. How do you know if your answers are correct?

$\sin^{-1}(\frac{24}{25}) = C$ $\cos^{-1}(7/25) = C$ $\tan^{-1}(24/7) = C$ $C \approx 73.74°$

$\sin^{-1}(7/25) = T$ $\cos^{-1}(24/25) = T$ $\tan^{-1}(7/24) = T$ $T \approx 16.26°$

1) C & T should add up to 90°.

2) all 3 C answers should be the same. Same w/ T answers.

Trigonometry practice. In this chapter, you learned the three main trigonometric ratios. ~~Their names are~~

sine, cosine, and tangent.

came from slope ratio

Write the formulas for each ratio below.

1) $\sin\theta = \frac{\text{opp leg}}{\text{hyp}}$ $\quad \sin^{-1}\left(\frac{\text{opp}}{\text{hyp}}\right) = \theta$

2) $\cos\theta = \frac{\text{adj. leg}}{\text{hyp}}$ $\quad \cos^{-1}\left(\frac{\text{adj}}{\text{hyp}}\right) = \theta$

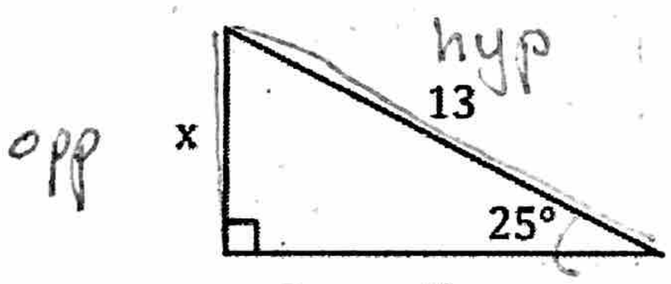
3) $\tan\theta = \frac{\text{opp leg}}{\text{adj. leg}}$ $\quad \tan^{-1}\left(\frac{\text{opp}}{\text{adj}}\right) = \theta$

You also learned the inverse trigonometric functions. These are called $\sin^{-1}$, $\cos^{-1}$, and $\tan^{-1}$. Basically, you use these when you need to solve for a missing angle and you use the regular trigonometric ratios when you know the ∠ and need to find a side.

Write the 3 inverse formulas underneath the formulas above.

Solve for the missing side or angle. Round your answer to the nearest hundredth. Show all evidence of your thinking.

12.

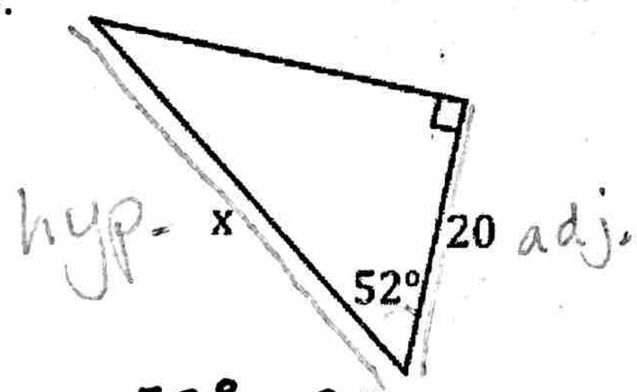


$\frac{\sin 25°}{1} = \frac{x}{13}$

$13 \sin 25° = x$

$5.49 \approx x$

13.

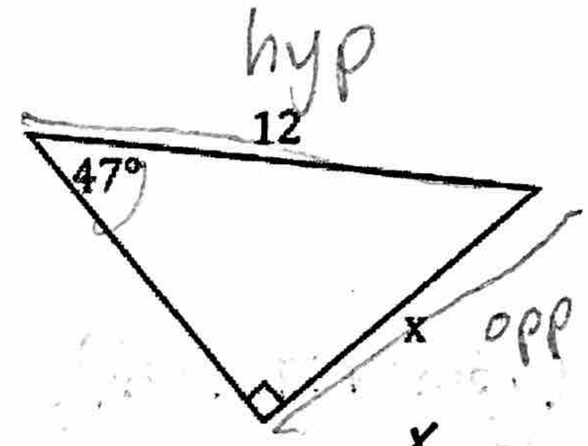


$\frac{\cos 52°}{1} = \frac{20}{x}$

$\frac{x\cos 52°}{\cos 52°} = \frac{20}{\cos 52°}$

$x \approx 32.49$

14.

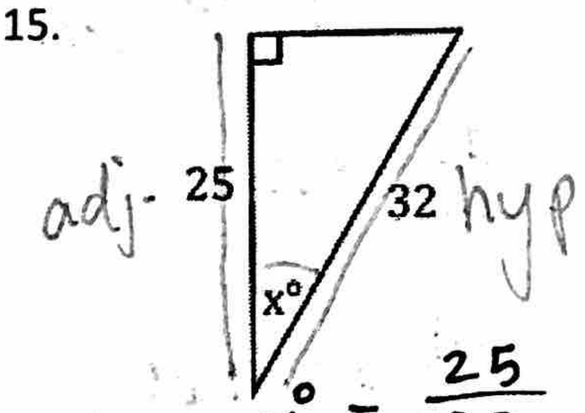


$\sin 47° = \frac{x}{12}$

$12 \sin 47° = x$

$x \approx 8.78$

15.

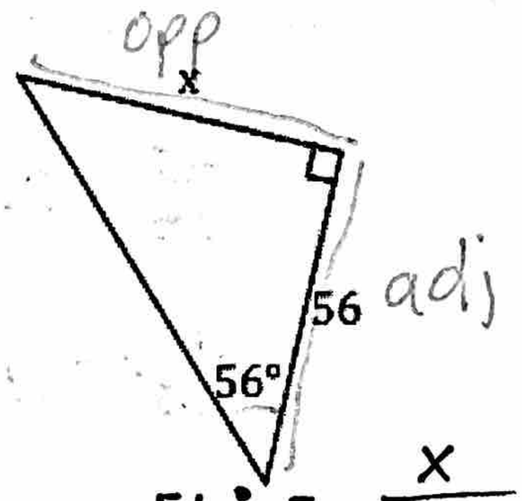


$\cos x° = \frac{25}{32}$

$\cos^{-1}(25/32) = x$

$x \approx 38.62°$

16.

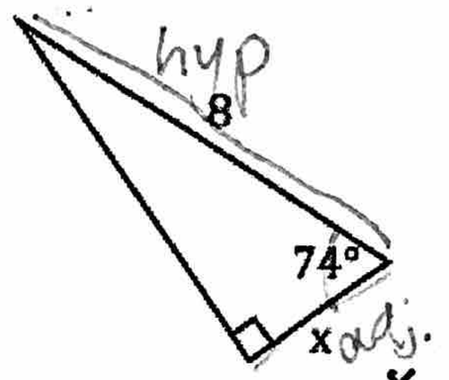


$\tan 56° = \frac{x}{56}$

$56 \tan 56° = x$

$x \approx 83.02$

17.

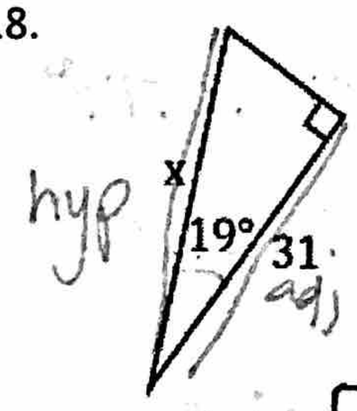


$\cos 74° = \frac{x}{8}$

$8 \cos 74° = x$

$x \approx 2.21$

18.



$\frac{\cos 19}{1} = \frac{31}{x}$

$\frac{x\cos 19}{\cos 19} = \frac{31}{\cos 19}$

$x = \frac{31}{\cos 19°}$

$x \approx 32.79$

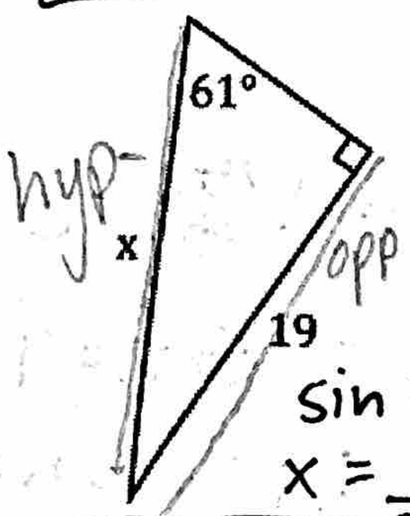
19.

$\tan x = \frac{11}{21}$

$\tan^{-1}\left(\frac{11}{21}\right) = x$

$x \approx 27.65°$

20.



$\sin 61 = \frac{19}{x}$

$x = \frac{19}{\sin 61}$

$x \approx 21.72$