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$a_n = a_1 \cdot r^{n-1}$ $\quad 32 + 16 + \ldots$ $\quad \cdot \frac{1}{2}$

$a_n = 32 \cdot \left(\frac{1}{2}\right)^{n-1}$

$S_n = \dfrac{a_1 - a_n \cdot r}{1-r}$

$= \dfrac{32 - 1 \cdot 1/2}{1 - 1/2} = \dfrac{\frac{63}{2}}{\frac{1}{2}} = 63$

52 $\displaystyle\sum_{i=0}^{9} 9\left(\overset{\downarrow r}{\frac{3}{4}}\right)^{i}$ $\qquad S_n = \dfrac{a_1 - a_1 \cdot r^{n}}{1-r}$

$= \dfrac{9 - 9 \cdot \frac{3}{4}^{10}}{1 - \frac{3}{4}}$

$a_1 = 9\left(\frac{3}{4}\right)^{\cancel{0}} = 9$

$= 4.85$

$n = 9 - 0 + 1 = 10$

7/ $\displaystyle\sum_{n=1}^{\infty} 8 \cdot \left(\frac{1}{5}\right)^{n-1}$ $\qquad S = \dfrac{a_1}{1-r}$

$r = 1/5$ $\qquad S = \dfrac{8}{1 - \frac{1}{5}} = \dfrac{8}{\frac{4}{5}}$

$0 < r < 1$ $\qquad = \cancel{8}^{2} \cdot \frac{5}{\cancel{4}}$

$a_1 = 8 \cdot \cancel{\left(\frac{1}{5}\right)^{1-1}} = 8$ $\qquad = 10$

TRIG SEMESTER REVIEW

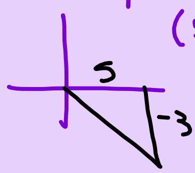
* List the 8 fund. identities.
* Special angle table

Give identity sheet
special ∠ table
Linear & Ang Vel.
formulas

1)

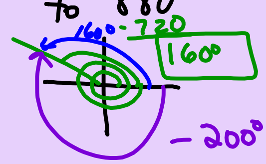
2) Draw a picture.

(5, -3)



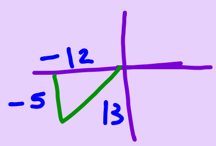
$\cos\theta = \frac{x}{r}$

3) Coterminal angles to 880°



4) All Star Trig Class

5) If $\csc\theta = \frac{-13}{5} = \frac{r}{y}$ + $\tan\theta > 0$, find $\cos\theta$.



$x^2 + 25 = 169$

$\sqrt{x^2} = \sqrt{144}$

$x = 12$

$\cos\theta = \frac{x}{r}$

$= \frac{-12}{13}$

6-7)

Deg → Rads $* \frac{\pi}{180°}$

Rads → Deg $* \frac{180°}{\pi}$

Arc Length

$S = r\theta$

All done in rads

Angular Velocity

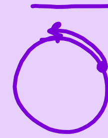
$\omega = \frac{\theta}{t}$

4 revolutions in 10 sec

$\omega = \frac{4 \cdot 2\pi}{10}$

$= \frac{4}{5}\pi \frac{rad}{sec}$

Linear Velocity



$V = \frac{r\theta}{t} = \frac{s}{t} = r\omega$

Page 2

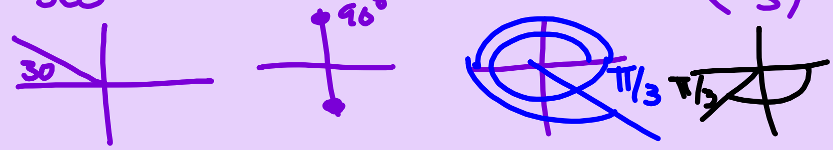
11. Soh cah toa
Oscar. . . .
Law of sines/cosines

12) Special angle — On no graphing calculator page

$3\frac{2}{3}$

$$\sec^2 150^\circ \sin 270^\circ - \tan \frac{11\pi}{3} \csc\left(-\frac{2\pi}{3}\right)$$

$\cos 30 = \frac{\sqrt{3}}{2}$



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

$$\left(-\frac{2}{\sqrt{3}}\right)^2(-1) - \left(-\cancel{\sqrt{3}}\right)\left(-\frac{2}{\cancel{\sqrt{3}}}\right)$$

$$-\frac{4}{3} + 2 = -\frac{4}{3} + \frac{6}{3} = \frac{2}{3}$$

Verify.

$(\sec\theta-\tan\theta)(\sec\theta-\tan\theta)$

45/ $$\frac{(\sec\theta-\tan\theta)^2+1}{\sec\theta\csc\theta-\tan\theta\csc\theta} = 2\tan\theta$$

$$\frac{\sec^2\theta-2\sec\theta\tan\theta+\cancel{(\tan^2\theta+1)}^{\sec^2\theta}}{\csc\theta(\sec\theta-\tan\theta)} = 2\tan\theta$$

$$\frac{2\sec^2\theta-2\sec\theta\tan\theta}{\csc\theta(\sec\theta-\tan\theta)}$$

$$\frac{2\sec\theta\cancel{(\sec\theta-\tan\theta)}}{\csc\theta\cancel{(\sec\theta-\tan\theta)}} = 2\tan\theta$$

$$\frac{2\cdot\frac{1}{\cos\theta}}{\frac{1}{\sin\theta}}\cdot\frac{\sin\theta}{1}$$

$$2\,\frac{\sin\theta}{\cos\theta}$$

$$2\tan\theta = 2\tan\theta$$

$\csc\theta = \frac{1}{\sin\theta}$

$\sec\theta = \frac{1}{\cos\theta}$

$\cot\theta = \frac{1}{\tan\theta}$

$\tan\theta = \frac{\sin\theta}{\cos\theta}$

$\cot\theta = \frac{\cos\theta}{\sin\theta}$

$\sin^2\theta+\cos^2\theta = 1$

$1+\tan^2\theta = \sec^2\theta$

$1+\cot^2\theta = \csc^2\theta$

$$\frac{\sin 2x}{2\sin x} = \cos^2\left(\frac{x}{2}\right) - \sin^2\left(\frac{x}{2}\right) \longrightarrow \cos \cancel{2}\left(\frac{x}{\cancel{2}}\right)$$

$$\frac{(\cancel{2}\,\cancel{\sin x}\cos x)}{\cancel{2}\,\cancel{\sin x}} = \left(\sqrt{\frac{1+\cos x}{2}}\right)^2 - \left(\sqrt{\frac{1-\cos x}{2}}\right)^2$$

$$\cos 2x = \cos^2 x - \sin^2 x$$
$$= 2\cos^2 x - 1$$
$$= 1 - 2\sin^2 x$$

$$\cos x = \frac{1+\cos x}{2} + \frac{-1+\cos x}{2}$$
$$= \frac{\cancel{2}\cos x}{\cancel{2}}$$

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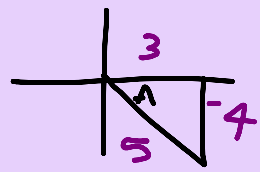
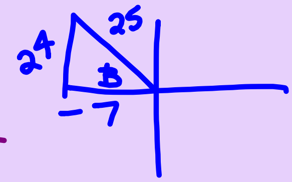
Find $\cos(A+B)$ if $\tan A = \frac{-4}{3}\frac{y}{x}$ $\csc B = \frac{25}{24} = \frac{r}{y}$

& A in Q = IV B in Q I.





$\cos(A+B) =$

$\cos A \cos B - \sin A \sin B$

$\left(\frac{3}{5}\right)\left(\frac{-7}{25}\right) - \left(\frac{-4}{5}\right)\left(\frac{24}{25}\right)$

$-\frac{21}{125} + \frac{96}{125} = \frac{75}{125} = \frac{3}{5}$