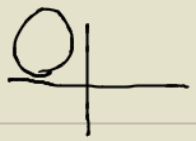
9. $\sin\theta = \frac{2}{7}$, θ in QII



RECALL

SIN IS $\frac{y}{r}$

SO $y = 2$ $r = 7$

$x^2 + y^2 = r^2$

$x^2 + 2^2 = 7^2$

$x^2 + 4 = 49$

$x^2 = 49 - 4$

$x^2 = 45$

$x = \pm\sqrt{45}$

$x = \pm\sqrt{3 \cdot 3 \cdot 5}$

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

SO $x = -3\sqrt{5}$

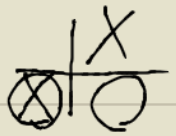
WANT $\tan\theta = \frac{y}{x}$

$= \frac{2}{-3\sqrt{5}}$

$= \frac{-2\sqrt{5}}{3\sqrt{5}\sqrt{5}}$

$= \frac{-2\sqrt{5}}{15}$

10. $\cot\theta = 5$ "$\frac{x}{y}$" $\sin\theta < 0$ "y"



QIII

x IS NEG

y IS NEG

$\cot\theta = \frac{5}{1}$

SO $x = -5$, $y = -1$

$r = \sqrt{x^2 + y^2}$

$r = \sqrt{(-5)^2 + (-1)^2} = \sqrt{26}$

WANT $\sec\theta = \frac{r}{x}$

$= \frac{\sqrt{26}}{-5}$

11. $\sin 20^\circ$

$= 0.3420$

12. $\cot 35^\circ$

$= \frac{1}{\tan 35^\circ}$

$= 1.4281$

13. $\csc \frac{\pi}{5}$

$= \frac{1}{\sin \frac{\pi}{5}}$

$= 1.7013$

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

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

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

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

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

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

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

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