

$$\textcircled{1} \cot \theta = \sqrt{7}, \text{ find } \tan \theta$$

$$= \boxed{\frac{1}{\sqrt{7}}}$$

$$\textcircled{2} \cos x = \frac{2}{3}, \text{ find } \sec x$$

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

$$\frac{1}{\frac{2}{3}} = \sec x$$

$$1 \cdot \frac{3}{2} \sec x = \boxed{\frac{3}{2}}$$

$$\textcircled{3} \text{ If } \tan \alpha = \frac{1}{5}, \text{ find } \cot \alpha$$

$$\cot \alpha = \boxed{5}$$

$$\textcircled{4} \sin \beta = -\frac{5}{6}, \text{ find } \csc \beta$$

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

$$\csc \beta = \boxed{-\frac{6}{5}}$$

$$\textcircled{5} \cos x = \frac{1}{6}, \sin x = \frac{\sqrt{35}}{6}, \text{ find } \cot x$$

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

$$= \frac{\frac{1}{6}}{\frac{\sqrt{35}}{6}}$$

$$= \frac{1}{6} \cdot \frac{6}{\sqrt{35}}$$

$$= \frac{1}{\sqrt{35}} \cdot \frac{\sqrt{35}}{\sqrt{35}} = \boxed{\frac{\sqrt{35}}{35}}$$

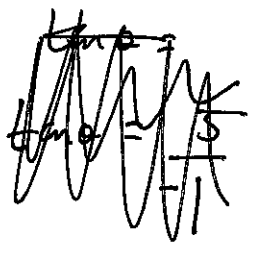
$$\sin^2 \theta + \cos^2 = 1 \quad \tan^2 \theta + 1 = \sec^2 \theta \quad \cot^2 \theta + 1 = \csc^2 \theta$$

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9) $\sec \theta$ and $\cos \theta$, $\tan \theta = -\frac{5}{1}$, $\cos \theta > 0$

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

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



$$(-5)^2 + 1 = \sec^2 \theta$$

$$\sqrt{26} = \sqrt{\sec^2 \theta}$$

$$\pm \sqrt{26} = \sec \theta$$

$$\sqrt{26} = \frac{1}{\cos \theta}$$

$$\cos \theta = \frac{1}{\sqrt{26}} \cdot \frac{\sqrt{26}}{\sqrt{26}}$$

$$\cos \theta = \frac{\sqrt{26}}{26}$$

10) $\cot \theta$ and $\sec \theta$, $\sin \theta = \frac{1}{3}$, $\tan \theta < 0$

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

$$\cot \theta = \frac{-2\sqrt{2}/3}{1/3}$$

$$\frac{\cos^2 \theta}{(1/3)^2} + 1 = \frac{1}{(1/3)^2}$$

$$-2\sqrt{2}/3 \cdot 3/1 = -\frac{6\sqrt{2}}{3}$$

$$\frac{1}{9} \left(\frac{\cos^2 \theta}{1/9} \right) + (1)^{1/9} = \left(\frac{1}{1/9} \right)^{1/9}$$

$$\cot \theta = -2\sqrt{2}$$

$$\sec \theta = \frac{1}{-2\sqrt{2}/3}$$

$$\sec \theta = \frac{1}{-2\sqrt{2}/3}$$

$$\cos^2 \theta + 1/9 = 1$$

$$\cos^2 \theta = 9/9 - 1/9$$

$$\sqrt{\cos^2 \theta} = \sqrt{8/9}$$

$$\cos \theta = 2\sqrt{2}/3$$

$$\frac{1}{-2\sqrt{2}} \cdot 3 = \frac{3}{-2\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$$

$$\sec \theta = \frac{3\sqrt{2}}{-4}$$

(11) ~~tan~~ $\tan \theta$ and $\sin \theta$, $\sec \theta = 4$, $\sin \theta > 0$

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

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

$$\sec \theta = 4$$

$$\cos \theta = \frac{1}{4}$$

$$\frac{\sin^2 \theta}{\left(\frac{1}{4}\right)^2} + 1 = (4)^2$$

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

$$\tan \theta = \frac{\sqrt{15}/4}{1/4}$$

$$\sqrt{15}/4 \cdot 4/1$$

$$= \frac{4\sqrt{15}}{4} = \sqrt{15}$$

$$\frac{1}{4} \left(\frac{\sin^2 \theta}{1/16} \right) + (1)^{1/4} = (16)^{1/4}$$

$$\sin^2 \theta + 1/4 = 4$$

$$\sin^2 \theta = \frac{16}{4} - \frac{1}{4} = \frac{15}{4}$$

$$\sqrt{\sin^2 \theta} = \sqrt{15/4}$$

$$\sin \theta = \sqrt{15}/4$$

$$\tan \theta = \sqrt{15}$$

(12) $\sin \theta$ and $\cot \theta$, $\cos \theta = 2/5$, $\sin \theta < 0$

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

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

$$\frac{\sin^2 \theta}{\left(\frac{2}{5}\right)^2} + 1 = \frac{1}{\left(\frac{2}{5}\right)^2}$$

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

$$\frac{2/5}{- \sqrt{21}/5}$$

$$\frac{2/5}{- \sqrt{21}/5} = \frac{-10}{5\sqrt{21}}$$

$$= \frac{-2}{\sqrt{21}} \cdot \frac{\sqrt{21}}{\sqrt{21}}$$

$$\cot \theta = \frac{-2\sqrt{21}}{21}$$

$$\frac{4}{25} \left(\frac{\sin^2 \theta}{4/25} \right) + 1^{(4/25)} = \frac{1}{4/25} \left(\frac{4}{25} \right)$$

$$\sin^2 \theta + 4/25 = 1$$

$$\sin^2 \theta = 1 - \frac{4}{25} = \frac{21}{25}$$

$$\sqrt{\sin^2 \theta} = \sqrt{21/25}$$

$$\sin \theta = -\sqrt{21}/5$$

(13) $\cos \theta$ and $\tan \theta$, $\csc \theta = 8/3$, $\tan \theta > 0$

(3)

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

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

$$\sin \theta = 3/8$$

$$\frac{\cos^2 \theta}{(3/8)^2} + 1 = (8/3)^2$$

$$9/64 \left(\frac{\cos \theta}{9/64} \right)^2 + 1 = (64/9) \cdot 9/64$$

$$\tan \theta = \frac{3/8}{\sqrt{55}/8}$$

$$\cos^2 \theta + 9/64 = 1$$

$$\cos^2 \theta = \frac{64}{64} - 9/64$$

$$3/8 \cdot 8/\sqrt{55} = \frac{3}{\sqrt{55}} \cdot \frac{\sqrt{55}}{\sqrt{55}}$$

$$\sqrt{\cos^2 \theta} = \sqrt{55/64}$$

$$\tan \theta = 3\sqrt{55}/55$$

$$\cos \theta = \frac{\sqrt{55}}{8}$$