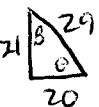
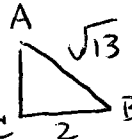
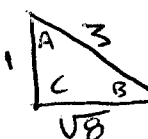
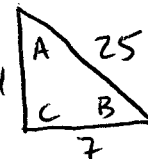


Section 6.5 Right Triangle Trigonometry - Solutions.

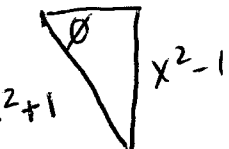
2.  $\sin \theta = \frac{21}{29}$ $\cos \theta = \frac{20}{29}$ $\tan \theta = \frac{21}{20}$ $\csc \theta = \frac{29}{21}$ $\sec \theta = \frac{29}{20}$
 $\cot \theta = \frac{20}{21}$ $\sin \beta = \frac{20}{29}$ $\cos \beta = \frac{21}{29}$ $\tan \beta = \frac{20}{21}$ $\csc \beta = \frac{29}{20}$
 $\sec \beta = \frac{29}{21}$ $\cot \beta = \frac{21}{20}$

5.  a) $\cos A = \frac{2}{\sqrt{13}}$ $\sin A = \frac{3}{\sqrt{13}}$ $\tan A = \frac{3}{2}$
 b) $\sec B = \frac{\sqrt{13}}{2}$ $\csc B = \frac{\sqrt{13}}{3}$ $\cot B = \frac{2}{3}$

8.  $\sin A = \frac{\sqrt{8}}{3}$ $\cos A = \frac{1}{3}$ $\tan A = \frac{\sqrt{8}}{1} = \sqrt{8}$
 $\csc A = \frac{3}{\sqrt{8}}$ $\cot A = \frac{1}{\sqrt{8}}$

11.  a) $\cos A = \frac{7}{25}$ $\sin A = \frac{24}{25}$ $\tan A = \frac{24}{7}$
 b) $\cos B = \frac{24}{25}$ $\sin B = \frac{7}{25}$ $\tan B = \frac{7}{24}$
 c) $(\tan A)(\tan B) = \left(\frac{24}{7}\right)\left(\frac{7}{24}\right) = 1$

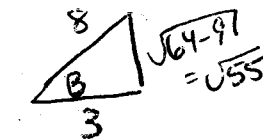
13. $\cos 60^\circ = \cos^2 30^\circ - \sin^2 30^\circ \Rightarrow \frac{1}{2} = \left(\frac{\sqrt{3}}{2}\right)^2 - \left(\frac{1}{2}\right)^2 = \frac{3}{4} - \frac{1}{4} = \frac{1}{2}$


28.  a) $\sin \phi = \frac{x^2-1}{x^2+1}$ $\cos \phi = \frac{x^2+1}{x^2+1}$ $\tan \phi = \frac{x^2-1}{x^2+1}$
 b) $(\csc \phi)(\sec \phi)(\cot \phi) = \left(\frac{x^2+1}{x^2-1}\right)\left(\frac{x^2+1}{x^2+1}\right)\left(\frac{x^2+1}{x^2-1}\right)$

$$= \frac{\sqrt{(x^2+1)^2 - (x^2-1)^2}}{\sqrt{x^4+2x^2+1-x^4+2x^2-1}} = \sqrt{4x^2} = 2x$$

$$= \frac{(x^2+1)^2}{(x^2-1)^2}$$

c) $\sin(90^\circ - \phi) = \frac{2x}{x^2+1}$ $\cos(90^\circ - \phi) = \frac{x^2-1}{x^2+1}$

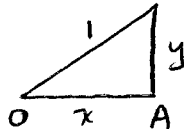
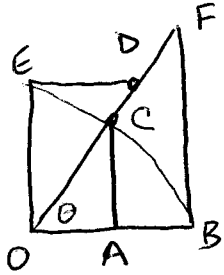
30.  $\cos B = \frac{3}{8}$ $\sin B = \frac{\sqrt{55}}{8}$ $\tan B = \frac{\sqrt{55}}{3}$
 $\sec B = \frac{8}{3}$ $\csc B = \frac{8}{\sqrt{55}}$ $\cot B = \frac{3}{\sqrt{55}}$

35.  a) $\sin \theta = \frac{x}{2}$ $\cos \theta = \frac{\sqrt{4-x^2}}{2}$ $\tan \theta = \frac{x}{\sqrt{4-x^2}}$
 $\csc \theta = \frac{2}{x}$ $\sec \theta = \frac{2}{\sqrt{4-x^2}}$ $\cot \theta = \frac{\sqrt{4-x^2}}{x}$
 a) $0^\circ < \theta < 90^\circ$

b) $180^\circ < \theta < 270^\circ$ a) $\sin \theta = -\frac{x}{2}$ $\cos \theta = -\frac{\sqrt{4-x^2}}{2}$
 $\tan \theta = \frac{x}{\sqrt{4-x^2}}$ $\csc \theta = -\frac{2}{x}$ $\sec \theta = -\frac{2}{\sqrt{4-x^2}}$ $\cot \theta = \frac{\sqrt{4-x^2}}{x}$

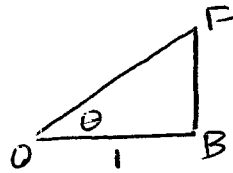
40. $T(45^\circ) - (C \circ D)(30^\circ) > 0 \Rightarrow \tan 45^\circ - \cos(2(30^\circ)) = 1 - \frac{1}{2} = \frac{1}{2} > 0$

49.



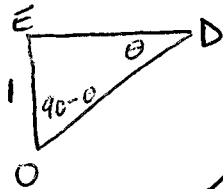
a) $\cos \theta = x = \overline{AO}$

b) $\sin \theta = y = \overline{AC}$

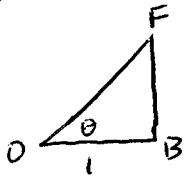


c) $\tan \theta = \frac{BF}{1} = \overline{BF}$

d) $\cot \theta = \frac{ED}{1} = \overline{ED}$

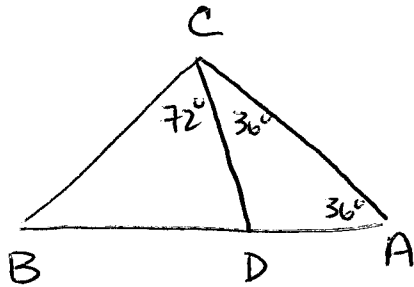


e) $\sec \theta = \frac{OF}{1} = \overline{OF}$



f) $\csc \theta = \frac{OD}{1} = \overline{OD}$

54a)



a) $\angle B = 180 - (36 + 36 + 72) = 36^\circ$

$\angle BDC = 180 - (72 + 36) = 72^\circ$

$\angle ADC = 180 - (36 + 36) = 108^\circ$