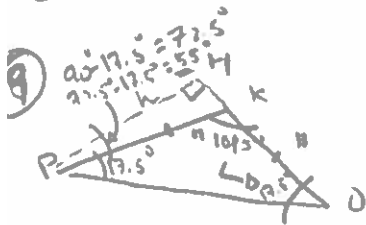
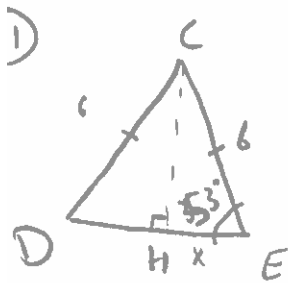


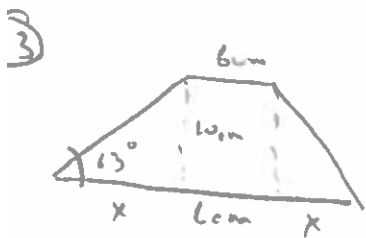
$$h = 17 \cdot \sin(40^\circ) =$$



$$h = 11 \cdot \cos(55^\circ) =$$



$$DE = 2x = 2(6 \cdot \cos(53^\circ)) =$$



$$\text{base} = 2x + 6\text{cm} = 2\left(\frac{10\text{cm}}{\tan 63^\circ}\right) + 6\text{cm} =$$

5

$$\arcsin(.0175) =$$

$$\arccos(.06814) =$$

$$\arcsin(.5015) =$$

$$\arccos(.0670) =$$

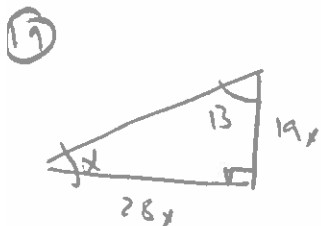
7

$$\arctan(1.3227) =$$

$$\arctan(6.152) =$$

$$\arctan(.7846) =$$

$$\arctan(9.254) =$$



$$\alpha = \arctan \frac{5}{12} =$$

$$\beta = \arctan \frac{12}{5} =$$

21

$$a) \sin d = \sqrt{1 - \cos^2 d} = \sqrt{1 - \left(\frac{5}{13}\right)^2} = \frac{\sqrt{13^2 - 5^2}}{13} = \left[\frac{12}{13}\right]$$

$$\tan d = \frac{\sin d}{\cos d} = \left[\frac{12}{5}\right]$$

$$b) \sin d = \sqrt{1 - \cos^2 d} = \sqrt{1 - \left(\frac{15}{17}\right)^2} = \frac{\sqrt{17^2 - 15^2}}{17} = \left[\frac{8}{17}\right]$$

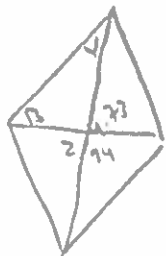
$$\tan d = \frac{\sin d}{\cos d} = \left[\frac{8}{15}\right]$$

$$c) \sin \alpha = \sqrt{1 - .36} = \underline{.8} \quad \tan \alpha = .8 / .6 = \underline{4/3}$$

$$23) a \cdot \cos(60^\circ) = \underline{1/2 a}$$

$$25) a) \underline{\alpha} \quad b) \underline{\beta} \quad c) \cos \alpha = \frac{15}{35} \quad \cos \beta = \frac{14}{35} \quad \underline{\beta} \quad d) \underline{\beta} \quad e) \underline{\beta} \quad f) \underline{\alpha}$$

27)

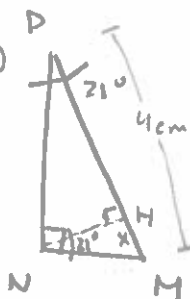


$$\alpha = \arctan\left(\frac{2.94}{4.73}\right)$$

$$2\alpha = 2\arctan\left(\frac{2.94}{4.73}\right) = \text{cancel out}$$

$$2\beta = 2\arctan\left(\frac{4.73}{2.94}\right) =$$

29)

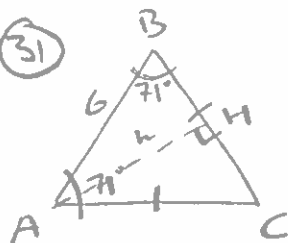


$$NM = 4 \text{ cm} \cdot \sin 21^\circ$$

$$HM = NM \cdot \sin 21^\circ = 4 \text{ cm} \cdot \sin^2 21^\circ =$$

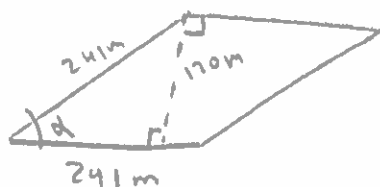
$$(\text{BTW} - HP \text{ is } 4 \text{ cm} \cdot \cos^2 21^\circ \quad \sin^2 + \cos^2 = 1)$$

31)



$$AH = 6 \cdot \sin 71^\circ =$$

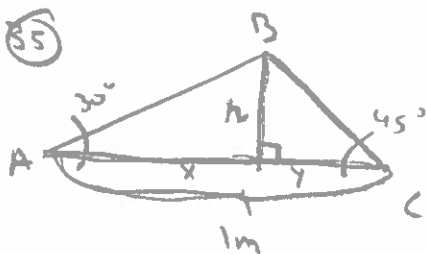
33)



$$\sin \alpha = \frac{120 \text{ m}}{241 \text{ m}} \quad \alpha = \underline{\underline{\arcsin\left(\frac{120}{241}\right)}}$$

$$\beta = \underline{\underline{\arccos\left(\frac{120}{241}\right) + \pi/2}}$$

35)



$$\tan 45^\circ = h/y \quad \tan 30^\circ = h/x$$

$$y = h \cdot \cot 45^\circ \quad x = h \cdot \cot 30^\circ \quad x + y = 1$$

$$h(\cot 45^\circ + \cot 30^\circ) = 1$$

$$h(1 + \sqrt{3}) = 1$$

$$h = \frac{1}{1 + \sqrt{3}} = \frac{1 - \sqrt{3}}{1 - 3} = \underline{\underline{\frac{\sqrt{3} - 1}{2}}}$$

$$AB = \frac{h}{\sin 30^\circ} = \frac{\sqrt{3} - 1}{1/2} = \underline{\underline{\sqrt{3} - 1}}$$

$$BC = \frac{h}{\sin 45^\circ} = \frac{\sqrt{3} - 1}{\sqrt{2}/2} = \underline{\underline{\frac{\sqrt{6} - \sqrt{2}}{2}}}$$

$$(37) \quad 2 \tan^{-1}\left(\frac{1}{\sqrt{3}}\right) = \underline{\underline{60^\circ}} \quad 2 \tan^{-1}\left(\frac{\sqrt{3}}{1}\right) = \underline{\underline{120^\circ}}$$

$$(39) \quad a) \quad \frac{\sin^2 d}{1 + \cos d} = \frac{1 - \cos^2 d}{1 + \cos d} = \underline{\underline{1 - \cos d}} \quad b) \quad \frac{\cos^2 d}{\sin d - 1} = \frac{1 - \sin^2 d}{\sin d - 1} = \underline{\underline{-1 - \sin d}}$$

$$c) \quad \frac{\tan d + \tan \beta}{\cot d + \cot \beta} = \frac{(\sin d \sin \beta)(\sin d \cos \beta + \sin \beta \cos d)}{(\cos d \cos \beta)(\cos d \sin \beta + \cos \beta \sin d)} = \underline{\underline{\tan d \tan \beta}}$$

$$d) \quad \frac{\sin d + \cos d}{\sec d + \csc d} = \frac{(\sin d \cos d)(\sin d + \cos d)}{\sin d + \cos d} = \underline{\underline{\sin d \cos d}}$$

$$(41) \quad a) \quad \sin^3 d + \sin d \cos^2 d = \sin d (\sin^2 d + \cos^2 d) = \underline{\underline{\sin d}}$$

$$b) \quad \frac{\cos^2 d}{1 - \sin d} = \frac{1 - \sin^2 d}{1 - \sin d} = \underline{\underline{1 + \sin d}}$$

$$c) \quad \tan d \cot d = \frac{\sin d}{\cos d} + \frac{\cos d}{\sin d} = \frac{\sin^2 d + \cos^2 d}{\sin d \cos d} = \frac{1}{\sin d \cos d} = \underline{\underline{\csc d \sec d}}$$

$$d) \quad \frac{\sec d}{\cot d + \tan d} = \frac{\sin d \cos d \sec d}{\cos^2 d + \sin^2 d} = \underline{\underline{\sin d}}$$

$$e) \quad \sec d - \sec d \sin^2 d = \sec d (1 - \sin^2 d) = \sec d \cos d \cos d = \underline{\underline{\cos d}}$$

$$f) \quad \sin d \sec d \cot d = \sin d \cdot \frac{1}{\cos d} \cdot \frac{\cos d}{\sin d} = \underline{\underline{1}}$$

$$g) \quad \sin^2 d (1 + \cot^2 d) = \sin^2 d + \cos^2 d = \underline{\underline{1}}$$

$$h) \quad \sin^2 d \sec^2 d - \sec^2 d = \sec^2 d (\sin^2 d - 1) = \sec^2 d (-\cos^2 d) = \underline{\underline{-1}}$$

$$i) \quad (\sin d + \cos d)^2 + (\sin d - \cos d)^2 = \sin^2 d + 2 \sin d \cos d + \cos^2 d + \sin^2 d - 2 \sin d \cos d + \cos^2 d = \underline{\underline{2}}$$

$$j) \quad \tan^2 d \cos^2 d + \cot^2 d \sin^2 d = \sin^2 d + \cos^2 d = \underline{\underline{1}}$$

$$k) \quad \tan d + \frac{\cos d}{1 + \sin d} = \frac{\sin d (1 + \sin d) + \cos^2 d}{\cos d (1 + \sin d)} = \frac{\sin d + 1}{\cos d (1 + \sin d)} = \underline{\underline{\sec d}}$$

$$l) \quad \frac{\sin d}{1 + \cos d} + \frac{1 + \cos d}{\sin d} = \frac{\sin^2 d + (1 + \cos d)^2}{(1 + \cos d) \sin d} = \frac{\sin^2 d + 1 + 2 \cos d + \cos^2 d}{(1 + \cos d) \sin d} = \frac{2 + 2 \cos d}{(1 + \cos d) \sin d} = \underline{\underline{2 \csc d}}$$

$$m) \frac{\tan^2 \alpha - \sin^2 \alpha}{\tan^2 \alpha} = \frac{\sin^2 \alpha - \sin^2 \alpha \cos^2 \alpha}{\sin^2 \alpha} = 1 - \cos^2 \alpha = \underline{\underline{\sin^2 \alpha}}$$

$$n) \frac{\sec \alpha - \csc \alpha}{\sec \alpha + \csc \alpha} = \frac{\sin \alpha - \cos \alpha}{\sin \alpha + \cos \alpha} = \frac{\sin^2 \alpha - 2 \sin \alpha \cos \alpha + \cos^2 \alpha}{\sin^2 \alpha - \cos^2 \alpha} = \frac{1 - \sin 2\alpha}{\cos 2\alpha} = \frac{\sec 2\alpha - \tan 2\alpha}{\cos 2\alpha}$$

$$o) \frac{\cos \alpha \cot \alpha - \sin \alpha \tan \alpha}{\csc \alpha - \sec \alpha} = \frac{\cos^2 \alpha - \sin^2 \alpha}{\cos \alpha - \sin \alpha} = \cos^2 \alpha + \cos \alpha \sin \alpha + \sin^2 \alpha = \underline{\underline{1 + \cos \alpha \sin \alpha}}$$

$$p) (\tan \alpha + \cot \alpha)^2 - (\tan \alpha - \cot \alpha)^2 = 4 \tan \alpha \cot \alpha = \underline{\underline{4}}$$