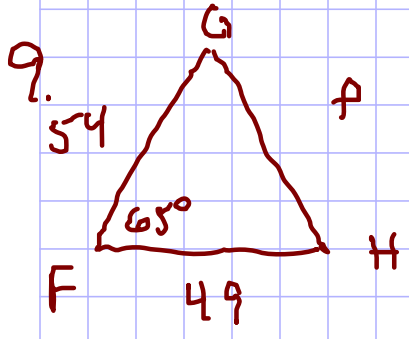


10.6 # 9-21 m3, 27-33 odd



SAS → L.O.C. $F = 65^\circ$ $f = 55.502$ ✓

$G = 53.1^\circ$ $g = 49$ ✓

$H = 61.9^\circ$ $h = 54$ ✓

$f^2 = (49)^2 + (54)^2 - 2(54)(49) \cos 65^\circ$

$f^2 = 3080.504159...$

$f = 55.502$

$\frac{\sin H}{54} = \frac{\sin 65^\circ}{55.502}$

$\sin H = \frac{54 \sin 65^\circ}{55.502}$

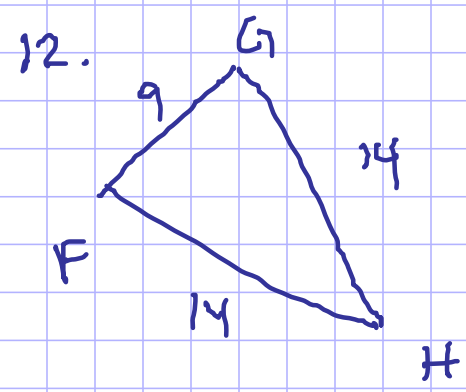
$G = 180^\circ - (F + H)$

$G = 180^\circ - (65^\circ + 61.9^\circ)$

$G = 53.1^\circ$

$H = \sin^{-1} \left(\frac{54 \sin 65^\circ}{55.502} \right)$

$H = 61.9^\circ$



$F = 71.3^\circ$ $f = 14$ ✓

$G = 71.3^\circ$ $g = 14$ ✓

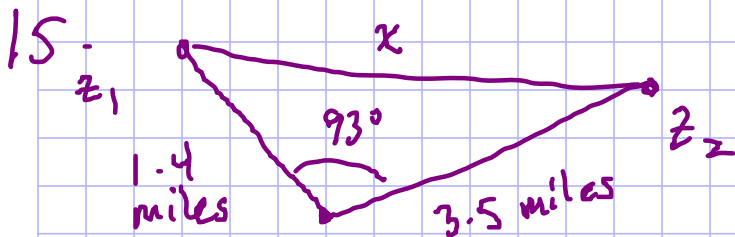
$H = 37.4^\circ$ $h = 9$ ✓

$$\cos F = \frac{g^2 + h^2 - f^2}{2gh} = \frac{(14)^2 + (9)^2 - (14)^2}{2(9)(14)} = \frac{81}{252}$$

$$F = \cos^{-1}\left(\frac{81}{252}\right) = 71.3^\circ$$

$$g = f \quad \therefore G = F$$

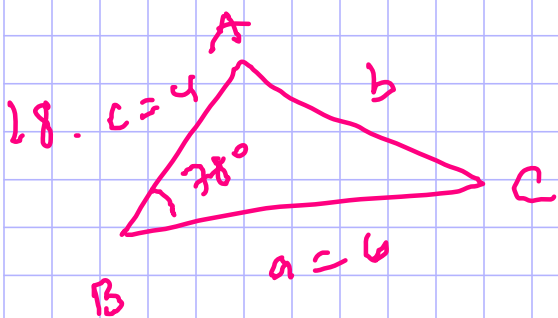
$$H = 180^\circ - (F + G) = 180^\circ - (71.3^\circ + 71.3^\circ) = 37.4^\circ$$



$$x^2 = (1.4)^2 + (3.5)^2 - 2(1.4)(3.5)\cos 93^\circ$$

$$x^2 = 14.72284 \dots$$

$$x = 3.8 \text{ miles}$$



$$A = \underline{64.5^\circ} \quad a = \underline{6} \quad \checkmark$$

$$B = \underline{78^\circ} \quad b = \underline{4.5} \quad \checkmark$$

$$C = \underline{37.5^\circ} \quad c = \underline{4} \quad \checkmark$$

$$b^2 = (6)^2 + (4)^2 - 2(6)(4)\cos 78^\circ$$

$$b^2 = 42.02023 \dots$$

$$b = 6.5$$

$$\frac{\sin A}{6} = \frac{\sin 78^\circ}{6.5}$$

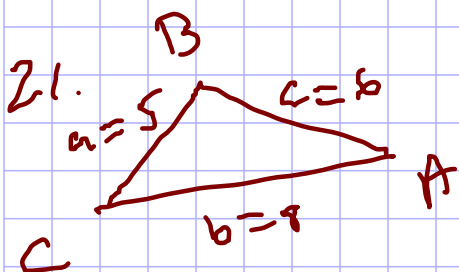
$$\sin A = \frac{6 \sin 78^\circ}{6.5}$$

$$A = \sin^{-1} \left(\frac{6 \sin 78^\circ}{6.5} \right) = 64.5^\circ$$

$$C = 180^\circ - (A+B)$$

$$C = 180^\circ - (64.5^\circ + 78^\circ)$$

$$C = 37.5^\circ$$



$$A = \underline{38.6^\circ} \quad a = \underline{5} \quad \checkmark$$

$$B = \underline{92.9^\circ} \quad b = \underline{8} \quad \checkmark$$

$$C = \underline{48.5^\circ} \quad c = \underline{6} \quad \checkmark$$

$$\cos B = \frac{(5)^2 + (6)^2 - (8)^2}{2(5)(6)}$$

$$B = \cos^{-1} \left(\frac{-3}{60} \right) = 92.9^\circ$$

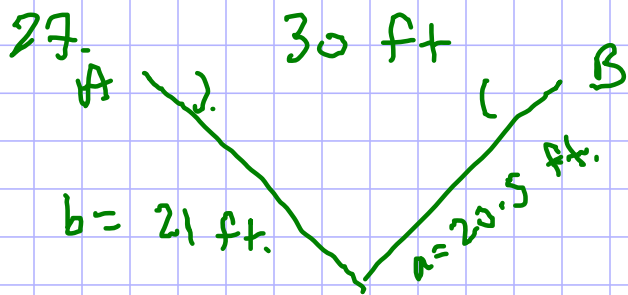
$$A = 180^\circ - (B+C)$$

$$A = 180^\circ - (92.9^\circ + 48.5^\circ)$$

$$A = 38.6^\circ$$

$$\frac{\sin C}{6} = \frac{\sin 92.9^\circ}{8}$$

$$C = \sin^{-1} \left(\frac{6 \sin 92.9^\circ}{8} \right) = 48.5^\circ$$



$$(a) \quad \cos A = \frac{(30)^2 + (21)^2 - (20.5)^2}{2(30)(21)}$$

$$A = \cos^{-1} \left(\frac{920.75}{1260} \right)$$

$$A = 43^\circ$$

$$\frac{\sin B}{21} = \frac{\sin 43^\circ}{20.5}$$

$$B = \sin^{-1} \left(\frac{21 \sin 43^\circ}{20.5} \right)$$

$$B = 44^\circ$$

$$(b) \quad a = 15 \text{ ft}$$

$$b = 21 \text{ ft}$$

$$\cos A = \frac{(30)^2 + (21)^2 - (15)^2}{2(30)(21)}$$

$$A = \cos^{-1} \left(\frac{1116}{1260} \right)$$

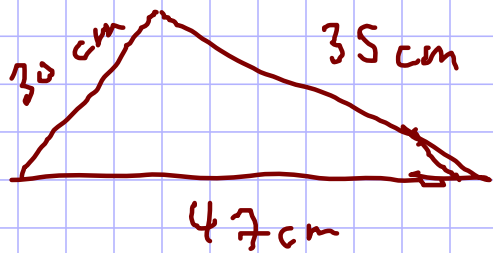
$$A = 28^\circ$$

$$\frac{\sin B}{21} = \frac{\sin 28^\circ}{15}$$

$$B = \sin^{-1} \left(\frac{21 \sin 28^\circ}{15} \right)$$

$$B = 41^\circ$$

29.



area (SSS) → Heron's formula

$$s = \frac{a+b+c}{2}$$

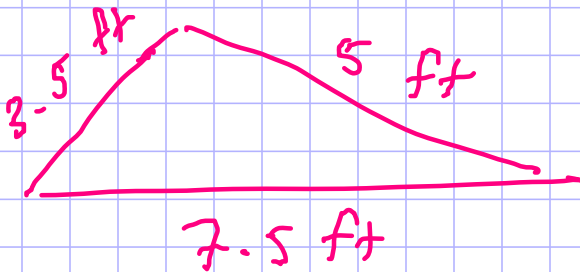
$$\text{area} = \sqrt{s(s-a)(s-b)(s-c)}$$

$$s = \frac{30+35+47}{2} = 56$$

$$\text{area} = \sqrt{56(56-47)(56-35)(56-30)}$$

$$\text{area} = 524.6 \text{ cm}^2$$

31.



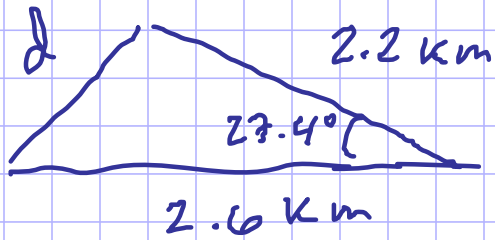
$$s = \frac{3.5+5+7.5}{2}$$

$$s = 8$$

$$\text{area} = \sqrt{8(8-3.5)(8-5)(8-7.5)}$$

$$\text{area} = 7.3 \text{ ft}^2$$

33.



$$d^2 = (2.6)^2 + (2.2)^2 - 2(2.6)(2.2) \cos 27.4^\circ$$

$$d^2 = 1.44339 \dots$$

$$d = 1.2 \text{ km}$$