

1-8-1

9-12-22

Isaac Abellci.

P: Find Magnitude of T_1

O: $T_2 = 34 \text{ N}$ $\downarrow = W$
 $T_1 = 31 \text{ N}$ 28°

A) R: T_2 63° 28°
 31 N $W = X=0, Y=-31 \text{ N}$

C) $T_1 \cos(28^\circ), T_1 \sin(28^\circ)$ $\sqrt{(35.1)^2 + (30)^2} = 33.7$
 $T_2 \cos(63^\circ), T_2 \sin(63^\circ)$
 $X = T_1 \cos(28^\circ) - T_2 \cos(63^\circ)$
 $Y = T_1 \sin(28^\circ) + T_2 \sin(63^\circ) = 31 \text{ N}$
 $T_1 = T_2 \left(\frac{\cos(63^\circ)}{\cos(28^\circ)} \right)$
 $T_2 = \left(\frac{\cos(63^\circ)}{\cos(28^\circ)} \right) (\cos(28^\circ) + T_2 \sin(63^\circ)) = 34$

B) R: F 20° 35° B
 $H = 9.7 \text{ lb}$ 13.8

P: What is the magnitude of G ?

O: $A = 20^\circ$ $B = 35^\circ$
 $W = 13.8 \text{ lb}$ $H = 9.7 \text{ lb}$

Y: $0 + G \sin 35^\circ + F \sin 20^\circ - 13.8 = 0$
 $X: 0 + G \cos 35^\circ - F \cos 20^\circ - 9.7 = 0$

C: Mag	ang	X	Y
H	\leftarrow	-9.7	0
W	\downarrow	0	-13.8
G	$\nearrow 35^\circ$	$G \cos 35^\circ$	$G \sin 35^\circ$
F	$\nearrow 20^\circ$	$F \cos 20^\circ$	$F \sin 20^\circ$
		0	0

1-8-2

9-12-22

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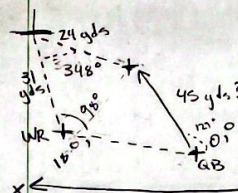
2.) P: A: how far does the pass have to go to reach the receiver?

Throw is the sum of all 3 vectors.

$$QB = (0, 0)$$

$$WR = (-18.0, 1.4)$$

then go up 31 yds at 98°



2nd run C: $y_{com} = 31 \sin(98^\circ) = 30.64 \text{ yds}$
 $x_{com} = 24 \cos(348^\circ) = 23.5 \text{ yds}$
 $y_{com} = 24 \sin(348^\circ) = -4.99 \text{ yds}$
 $x_{com} = 31 \cos(98^\circ) = -4.31 \text{ yds}$

set up table:

	X	Y	angle
WR:	-18.0	1.4 yds	$\leftarrow 98^\circ$
run 1	$31 \cos(98^\circ)$	$31 \sin(98^\circ)$	$\nwarrow 98^\circ$
run 2	$24 \cos(348^\circ)$	$24 \sin(348^\circ)$	$\searrow 348^\circ$
ball destination	0	0	.

$$X = 116 \quad 27.1 = Y \quad = 27.12$$

$$X = -18.0 + 31 \cos(98^\circ) + 24 \cos(348^\circ) = 0$$

$$Y = 1.4 + 31 \sin(98^\circ) + 24 \sin(348^\circ) = 0$$

$$6x + Fx = -9.7, \quad 6y + Fy = -13.8$$

$$-9.7 = 6 \cos 35^\circ + F \cos 20^\circ$$

$$-13.8 = 6 \sin 35^\circ + F \sin 20^\circ$$

Solve for G :

$$G = \frac{-9.7 - \cos 35^\circ}{\cos 20^\circ}$$

$$F = \frac{-13.8 - \sin 20^\circ}{\sin 35^\circ}$$

$$F = \frac{-13.8 - \sin 35^\circ}{\sin 20^\circ}$$

plug F into g.

$$-9.7 = \left(\frac{-13.8 - \sin 35^\circ}{\sin 20^\circ} \right) \cos 35^\circ + F \cos 20^\circ$$

used numeric solver
 $= 11.28$

C) P: Determine the angle of the vector S +ccw from X .

$$R: A = -1.6i + 4.7j, \quad B = 6.2i + 3.1j$$

$$C = 4.5i + -2.2j, \quad S = A + B - C$$

$$O: \begin{array}{r} -1.6i + 4.7j \\ + 6.2i + 3.1j \\ \hline 4.6i, 7.8j \end{array} \quad \begin{array}{r} 4.6i, 7.8j \\ - 4.5i, -2.2j \\ \hline .1i, 10j \end{array}$$

$$\tan^{-1} \left(\frac{10}{.1} \right) = 84.4^\circ$$