

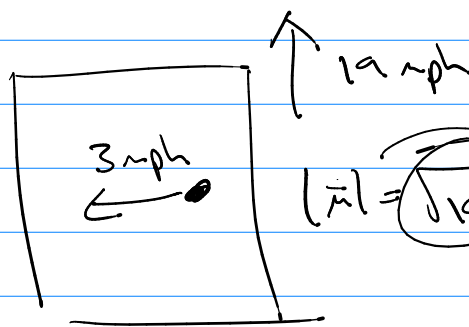
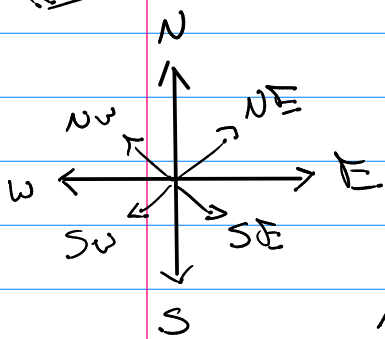
Math 243

Reminder: webassign key "wichita 2108 7531"

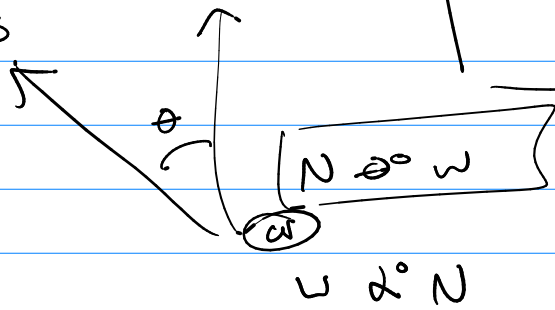
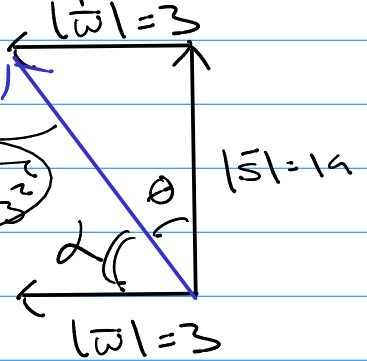
→ HW 12.1-12.4 plus reviews on deriv. / integrals are on webassign

Q5

12.8 #4 → Scalco 12.2.035



Speed = $|\vec{v}|$



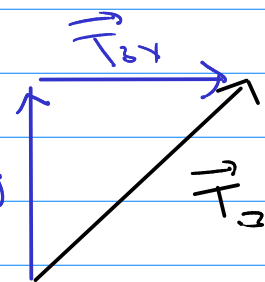
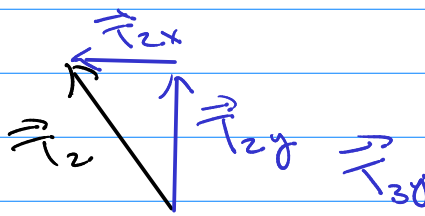
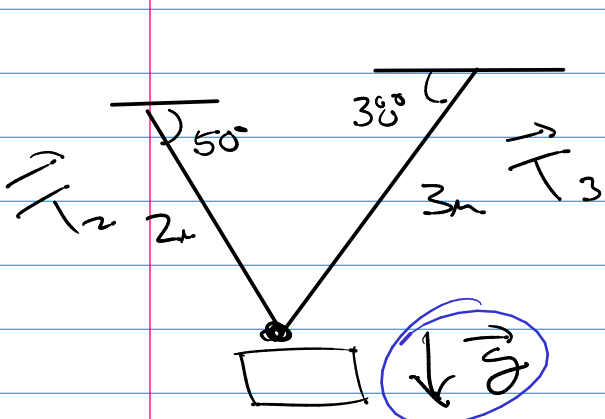
$$\sin \theta = \frac{3}{\sqrt{19^2 + 3^2}}$$

$$\tan \theta = \frac{3}{19}$$

$$\cos \theta = \frac{19}{\sqrt{19^2 + 3^2}}$$

$$\theta = \tan^{-1}\left(\frac{3}{19}\right)$$

$$\theta = \sin^{-1}\left(\frac{3}{\sqrt{19^2 + 3^2}}\right)$$

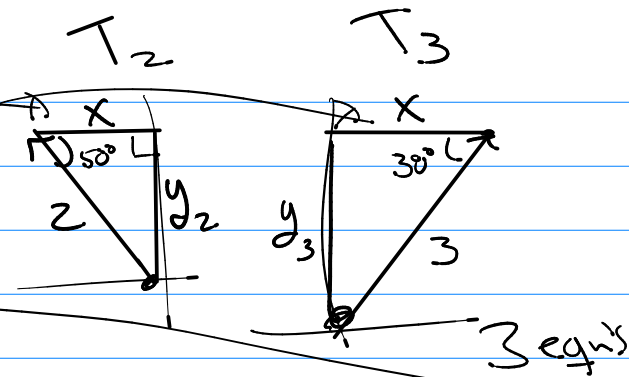


$$|\vec{g}| = 350 \text{ N}$$

System of vectors

Magnitude

$$\begin{cases} \vec{T}_{2y} + \vec{T}_{3y} + \vec{g} = \vec{0} \\ \vec{T}_{2x} + \vec{T}_{3x} = \vec{0} \end{cases}$$



$$y_2 + y_3 = 350$$

2 more eqns

$$x^2 + y_2^2 = 2^2$$

$$x^2 + y_3^2 = 3^2$$

3 unknowns

2 more eqns

$$\tan 50^\circ = \frac{y_2}{x}$$

$$\tan 30^\circ = \frac{y_3}{x}$$

$$y_2 = 350 - y_3$$

$$\tan 50^\circ = \frac{350 - y_3}{x}$$

$$\tan 50^\circ + \tan 30^\circ = \frac{350}{x}$$

2D

$$ax^2 + by^2 + cxy + dx + ey + f = 0$$

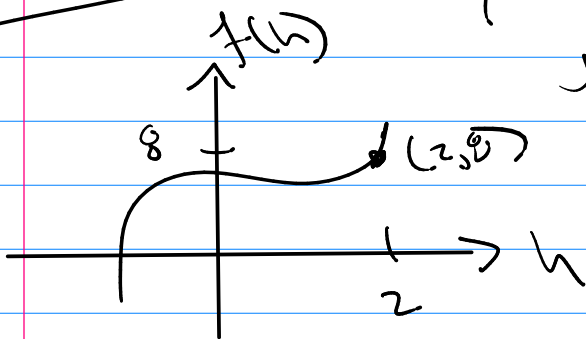
Calculus

1 out 2

Study of

$$f: \mathbb{R} \rightarrow \mathbb{R}$$

Set of real numbers



$$f(h) = h^3 - h + 2$$

$$f(2) = 8 \quad (2, 8)$$

$$2 \xrightarrow{f} 8$$

rule

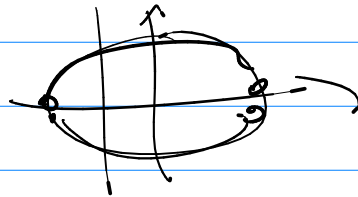
Functions to know

① explicit, implicit, piecewise defined.

$$y = 3s^2 + s$$

$$s=1 \rightarrow y=4$$

$$s^2 + t^2 = 4$$



Calculus do to functions?

① Derivatives

$$y = f(x)$$

↳ as x (indep. variable) changes
how does y (dep. variable) change?

how?

$$f'(x) = \boxed{D_x [f(x)]} = \frac{d}{dx} [f(x)] = [f(x)]'$$
$$= \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$$

② Anti-derivatives

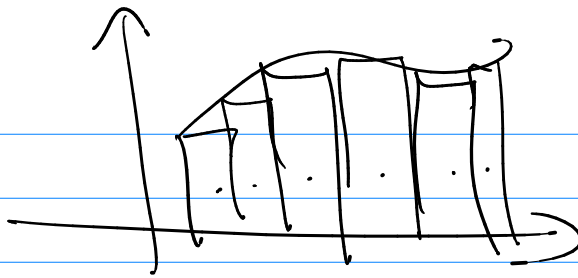
$$D_x [x^n] = n x^{n-1}$$

$$D_x [\sin(x)] = \cos(x)$$

deriv

$$A_x [\cos(x)] = \sin(x) + C$$

③ Areas:



Find $F(x)$

Area over $[a, b]$ under $f(x)$

$$= \int_a^b f(x) dx = F(b) - F(a)$$

where $A_x [f(x)] = F(x) + C$

Functions to know

① polynomial ④ $f(x) = 3(x-4)^3 + 2$

② rational = $\frac{pdx}{qdx}$

③ radicals $\sqrt{\quad} = (\quad)^{1/n}$

④ Algebraic

⑤ Trig

⑥ exponential ⑦ log or others

↘
Inverse Functions