

MATH 32A Final Study Guide

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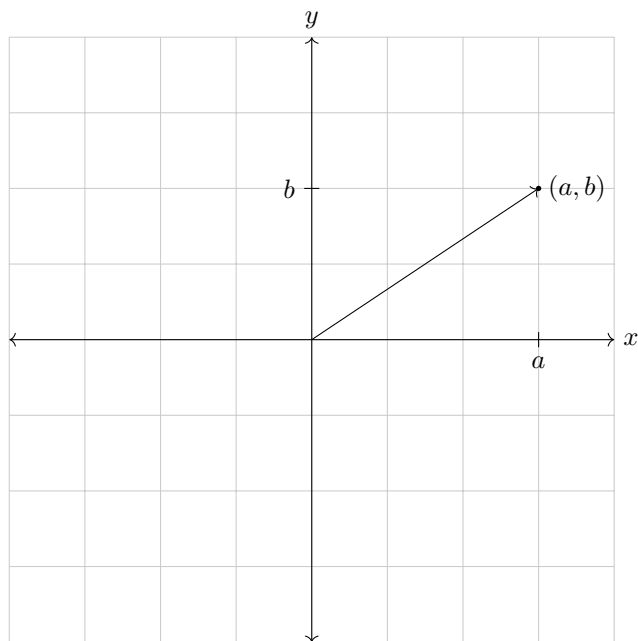
The date doesn't matter

1 Quick Reminder on Single Variable Calculus

- Applied to functions of one variable
- Classic example is business owner, attempts to maximize profit \rightarrow function of single variable x ,
 - Profit = $f(x)$ where x = set price of object
- More realistic model is $f(x_1, x_2, x_3)$ where x_1 = price, x_2 = money spent on advertisement, x_3 = market flux

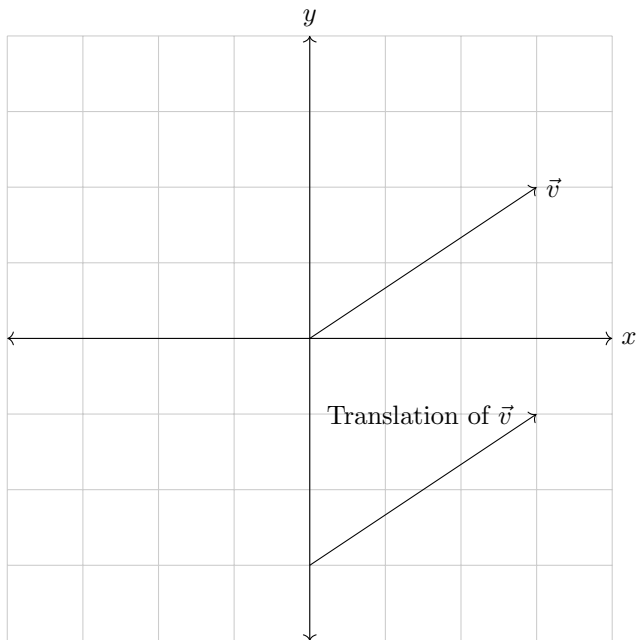
2 Vectors

- Def) Plane: \mathbb{R}^2 : points are (a, b) where a and b are real numbers
- Def) Vector: P, Q points $\rightarrow \vec{PQ}$ vector starts at P , ends at Q



- Take vector \vec{PQ} where $P = (a, b)$ $Q = (c, d)$

Components of \vec{PQ} are $\langle c - a, d - b \rangle = \begin{bmatrix} c - a \\ d - b \end{bmatrix}$



Translating a vector does not change the components, only the basepoints
 The component only takes into consideration the magnitude and direction

2.1 Properties of Vectors in 2-D

- Length of vector $\langle a, b \rangle = \sqrt{a^2 + b^2}$
- $\vec{v} = \langle a, b \rangle \quad \vec{w} = \langle c, d \rangle$