

MATH 124A

DON MARSHALL

MATH.WASHINGTON.EDU/~MARSHALL/MATH_124/MATH124_AUT16.HTML

BACKGROUND

GOALS

ON AVERAGE: 4 HOURS OUTSIDE CLASS BETWEEN EACH LECTURE

- LECTURE - DO HW SAME DAY AFTER CLASS
- QUIZ SECTION - COMPLETE ASSIGNMENT & READ FOR NEXT LECTURE

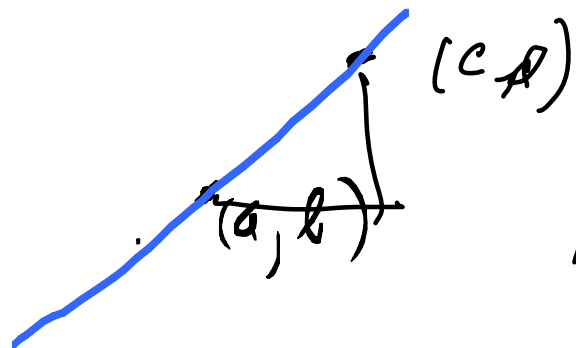
TONIGHT: TRY ALL PROBLEMS ON SECTION 2.1 (ASSIGNMENT 1)

THURS QUIZ: SEE DIAGNOSTIC TESTS
WORKSHEET / QUESTIONS ON 2.1

AFTER CLASS: READ SECTION 2.2
COMPLETE HW ON 2.1 (DUE MONDAY)

2.1

LINE:



$$\text{slope} = \frac{d-b}{c-a} = m$$

$$y = m(x-a) + b$$

EQUATION:

$$y = 7x - 3$$

$$\begin{array}{r} y \quad x = 1 \quad y = \\ \hline y \quad y = 2 \quad x = \end{array}$$

EASY TO SOLVE.

$$y = \sin(x)$$

$$y = 1.1$$

$$y = 1.01$$

ZOOM IN NEAR $(\pi/2, 1)$

ZOOM NEAR $(0, 0)$

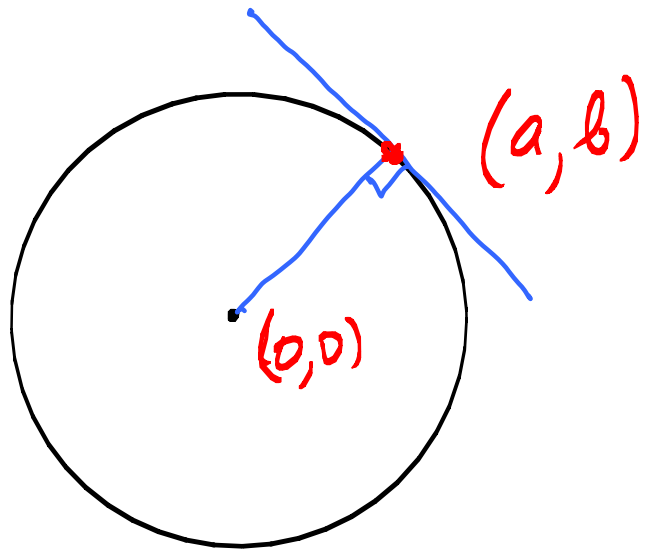
SLOPE — HOW DID WE FIND IT?

$$\sin\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}$$

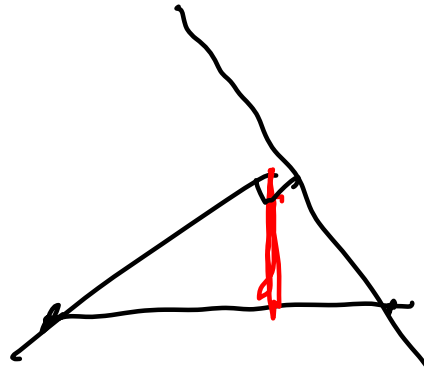
$$\frac{\pi}{3} \sim 1.0472$$

TANGENT LINE:

APPLICATIONS: SAILING
CRUISE MISSILE
DRONES



EQUATION OF TANGENT LINE



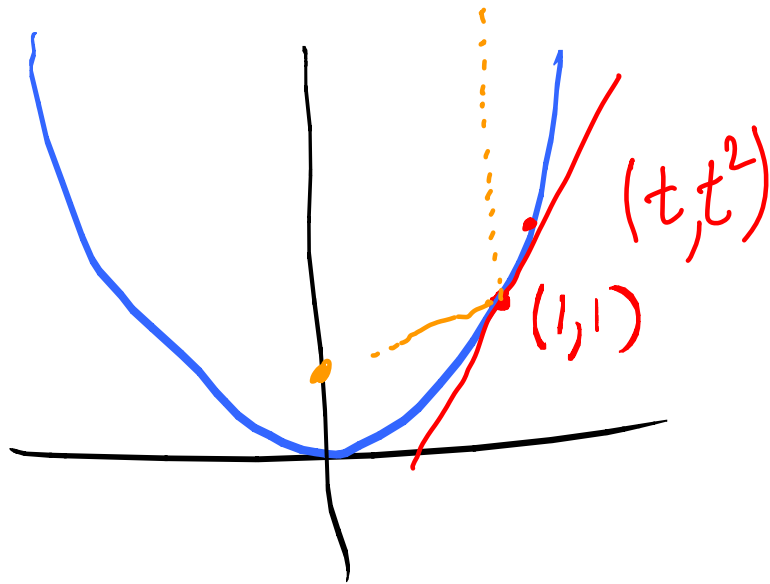
$$\text{slope} = -a/b$$

$$y = \left(\frac{-a}{b}\right)(x-a) + b$$

0

PARABOLA

$$y = x^2$$



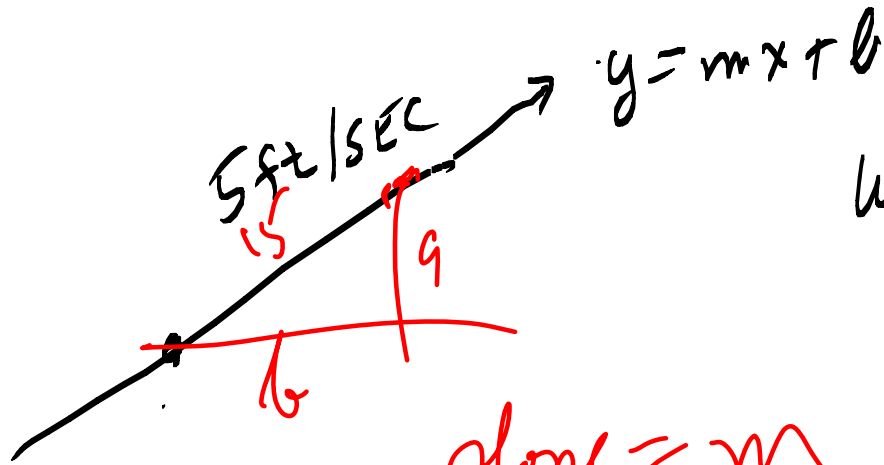
$$\begin{aligned} \text{chord slope} &= \frac{t^2 - 1}{t - 1} \\ &= \frac{(t-1)(t+1)}{t-1} \\ &= t+1 \\ &\rightarrow 2 \end{aligned}$$

EQUATION OF TANGENT LINE:

$$y = 2(x-1) + 1$$

$$y = \frac{\sin(x) - x}{x^3} \quad \text{near } (0,0)$$

VELOCITY: $\frac{\text{CHANGE IN DISTANCE}}{\text{CHANGE IN TIME}}$ (M.P.H.)



WHAT IS Δx AFTER 3 SEC?

$$\text{slope} = m = \frac{9}{6} \quad a^2 + b^2 = 15$$