MON 10-03-05

O.T.L. Ex.6) $f(x) = x^2 - 4x$

a) EQ. of tangent line AT $x = 1$.

NEED SLOPE & A POINT.

POINT $x = 1$; $y = ? = f(1) = 1^2 - 4(1) = -3$

$(1, -3)$

$$m_{tan} = \lim_{h \to 0} \frac{f(a+h) - f(a)}{h} \quad \text{or} \quad \lim_{h \to 0} \frac{f(1+h) - f(1)}{h}$$

$$= \lim_{h \to 0} \frac{(a+h)^2 - 4(a+h) - [a^2 - 4a]}{h}$$

$$= \lim_{h \to 0} \frac{a^2 + 2ah + h^2 - 4a - 4h - a^2 + 4a}{h}$$

$$= \lim_{h \to 0} \frac{2ah + h^2 - 4h}{h}$$

$$= \lim_{h \to 0} \frac{h(2a + h - 4)}{h} \quad \text{@ } h \to 0$$

$$= \lim_{h \to 0} (2a + h - 4)$$

$\therefore m_{tan} = 2a - 4 \rightarrow m(1, -3) = 2(1) - 4 = -2$

a) CONTINUED...

$m = -2$ POINT $(1, -3)$

$y = mx + b$

$-3 = -2 \cdot 1 + b$

$-3 = -2 + b$

$-1 = b$

$\therefore$ EQ. OF TAN LINE:

$y = -2x - 1$

1) EQ. OF NORMAL LINE.

↳ ⊥ TO tangent line.

$m_{tan} = -2 \rightarrow m_{NORMAL} = m_{\perp} = \frac{1}{2}$

SAME POINT (1, -3)

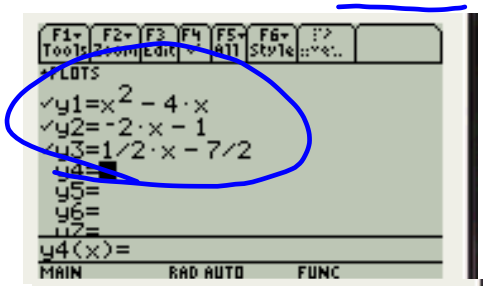
$y = mx + b$

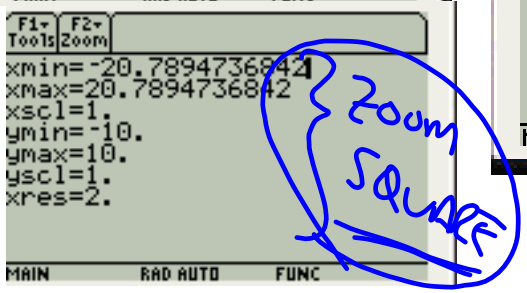
$-3 = \frac{1}{2} \cdot 1 + b$

$-3\frac{1}{2} = -\frac{7}{2} = b$

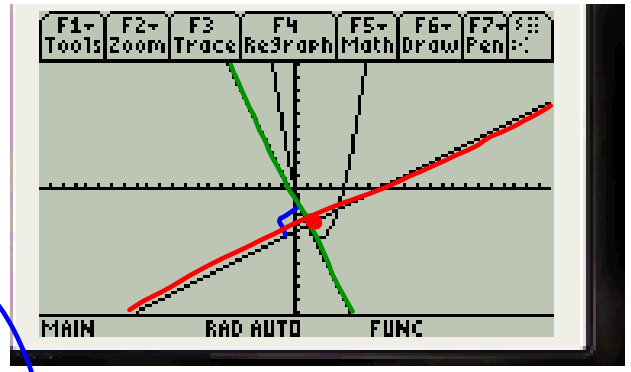
∴ EQ. OF NORMAL LINE:

$y = \frac{1}{2}x - \frac{7}{2}$





ZOOM SQUARE



⊥

O.T.L.

- CORRECT TODAY'S & FRIDAY'S –
- LOGS / LW DAY 9
- P. 87-88 1-13 (ODD)
- P.91 1-13 (ODD)

TEST WED: CHAP. 2

HELP EACH OTHER!