$$\lim_{x \to c^-} \frac{f(x) - f(c)}{x - c}$$

$$\lim_{x \to c^+} \frac{f(x) - f(c)}{x - c}$$

Must be =.

$3x^2 \quad x \leq 1$

$a - 3b \quad x > 1$

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$y = \ln(3x^2 + 2)$

$f'(2)$

$y' = \frac{6x}{3x^2 + 2}$

$\ln e = 1$

$e^0 = 1$

$f'(2) = \frac{6(2)}{3(2)^2 + 2} = \frac{12}{14} = \frac{6}{7}$

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$$x^2 - 3\ln y + xy^2 = 10$$

$$2x - \frac{3y'}{y} + x(2yy') + y^2 = 0$$

$$y\left(-\frac{3y'}{y} + 2xyy' = -2x - y^2\right)$$

$$-3y' + 2xy^2y' = -2xy - y^3$$

$$y'(-3 + 2xy^2) = -2xy - y^3$$

$$y' = \frac{-2xy - y^3}{-3 + 2xy^2}$$

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(27) $2x^2 - y^4 = 1$ $(1, 1)$

$4x - 4y^3y' = 0$

$\frac{-4y^3y'}{-4y^3} = \frac{-4x}{-4y^3}$

$y' = \frac{x}{y^3}$

1) Take Deriv
2) Plug in Pts to find slope.
3) $y = mx + b$

2) $y' = \frac{1}{1^3} = 1$

$m = 1$

3) $y = mx + b$

$1 = 1(1) + b$

$-1 \quad -1$

$0 = b$

$y = x$

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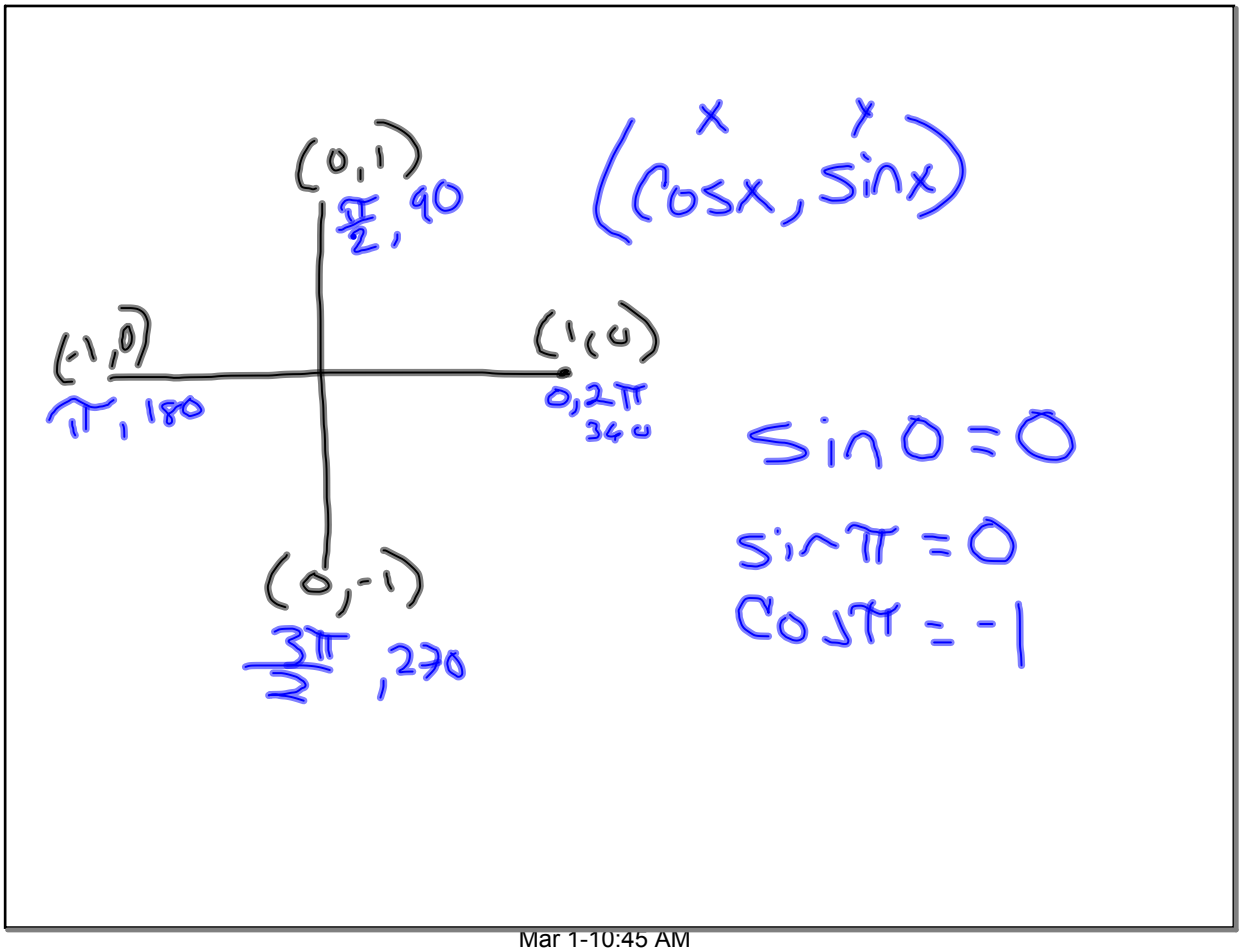

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log.

$$y = \sqrt{\frac{x^2-1}{x^2+1}}$$

$$\ln y = \frac{1}{2}\ln(x^2-1) - \frac{1}{2}\ln(x^2+1)$$

$$\frac{y'}{y} = \frac{1(2x)}{2(x^2-1)} - \frac{1(2x)}{2(x^2+1)}$$

$$y' = y\left[\frac{2x(x^2+1) - 2x(x^2-1)}{2(x^2-1)(x^2+1)}\right]$$

$$y' = \frac{(x^2-1)^{1/2}}{(x^2+1)^{1/2}}\left[\frac{x^3+x-x^3+x}{(x^2-1)(x^2+1)}\right]$$

$$y' = \frac{2x}{(x^2-1)^{1/2}(x^2+1)^{3/2}}$$

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