OCT 12

$m = \frac{-3}{4}$
$P(-2, 3)$

$$m = \frac{y - y_1}{x - x_1}$$

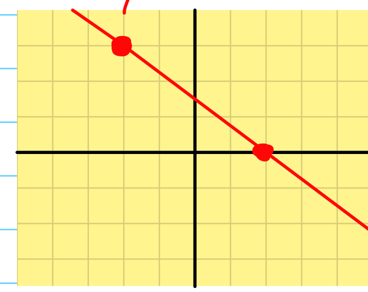
$$y - y_1 = m(x - x_1)$$

$$y - 3 = -\frac{3}{4}(x + 2)$$

$$4y - 12 = -3x - 6$$

$$3x + 4y = 6$$

find w/slope



$$x\text{-int}: \quad 3x = 6$$

$$x = 2$$

$$ax - by = c$$

$$m = \frac{a}{b}$$

$y = \frac{2}{x-1}$ find equation of tangent line at $x = 3$

$$m = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h}$$

$$m = \lim_{h \to 0} \frac{\frac{2}{x+h-1} - \frac{2}{x-1}}{h} \cdot \frac{(x+h-1)(x-1)}{(x+h-1)(x-1)}$$

$$m = \lim_{h \to 0} \frac{2(x-1) - 2(x+h-1)}{h(x-1)(x+h-1)}$$

$$m = \lim_{h \to 0} \frac{2x - 2 - 2x - 2h + 2}{h(x-1)(x+h-1)}$$

$$m = \lim_{h \to 0} \frac{-2}{(x-1)(x+h-1)}$$

$$m = \frac{-2}{(x-1)^2}$$

$$f'(3) = \frac{-2}{(3-1)^2} = \frac{-1}{2}$$ slope of tangent

$$y = \frac{2}{3-1}$$

$$y = 1$$

$$y - y_1 = m(x - x_1)$$

$$y - 1 = -\frac{1}{2}(x - 3)$$

$$2y - 2 = -x + 3$$

$$x + 2y = 5$$

$f(x) = \sqrt{1 - 2x}$ find equation of tangent at $x = -4$

$$m = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h}$$

$$= \lim_{h \to 0} \frac{\sqrt{1-2x-2h} - \sqrt{1-2x}}{h} \cdot \frac{\sqrt{1-2x-2h} + \sqrt{1-2x}}{\sqrt{1-2x-2h} + \sqrt{1-2x}}$$

$$= \lim_{h \to 0} \frac{1 - 2x - 2h - 1 + 2x}{h(\sqrt{1-2x-2h} + \sqrt{1-2x})}$$

$$= \lim_{h\to 0} \frac{-2}{\sqrt{1-2x-2h}+\sqrt{1-2x}}$$

$$= \frac{-2}{2(\sqrt{1-2x})}$$

$$m = \frac{-1}{\sqrt{1-2x}}$$

$$f'(-4) = \frac{-1}{\sqrt{1-2(-4)}} = -\frac{1}{3}$$

$$f(x) = \sqrt{1-2x}$$

$$f(-4) = \sqrt{1-2(-4)}$$

$$f(-4) = 3$$

$$y - y_1 = m(x - x_1)$$

$$y - 3 = -\frac{1}{3}(x+4)$$

$$3y - 9 = -x - 4$$

$$x + 3y = 5$$

OCT 27

$$f(x) = \frac{(2x-1)^3\sqrt{6-x}}{(x+1)^4}$$

$$f'(x) = \frac{\frac{d}{dx}\left((2x-1)^3\sqrt{6-x}\right)\cdot(x+1)^4 - \left((2x-1)^3\sqrt{6-x}\right)\cdot\frac{d}{dx}(x+1)^4}{(x+1)^8}$$

$$f'(x) = \frac{\left(3(2x-1)^2(2)\cdot\sqrt{6-x} + (2x-1)^3\cdot\frac{1}{2}(6-x)^{-\frac{1}{2}}(-1)\right)\cdot(x+1)^4 - \left((2x-1)^3\sqrt{6-x}\right)\cdot(4)(x+1)^3}{(x+1)^8}$$

$$f'(2) = \frac{\left(3\ (3)^2(2)\cdot 2 + 3^3\left(\frac{1}{2}\right)(4)^{-\frac{1}{2}}(-1)\right)\cdot 3^4 - \left(3^3(2)\right)\cdot 3^3\cdot 2^2}{3^8}$$

$$= \frac{\left(3^3\cdot 2^2 - 3^3\cdot 2^{-2}\right)(3^4) - (3^3\cdot 2)(3^3\cdot 2^2)}{3^8}$$

$$= \frac{3^7\left(4-\frac{1}{4}\right) - 3^6(8)}{3^6 \times 3^2}$$

$$= \frac{3\left(4-\frac{1}{4}\right) - 8}{3^2}$$

$$= \frac{12 - \frac{3}{4} - 8}{9}$$

$$= \frac{3\frac{1}{4}}{9}$$

$$= \frac{\frac{13}{4}}{9}$$

$$f'(2) = \frac{13}{36}$$

$$f(2) = \frac{3^3 \cdot 2}{3^4}$$

$$= \frac{2}{3}$$

$$y - y_1 = m(x - x_1)$$

$$y - \frac{2}{3} = \frac{13}{36}(x - 2)$$

$$36y - 24 = 13x - 26$$

$$2 = 13x - 36y$$