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Resolução prova

6- a, $y = \ln(5x+3x^7)$

$y' = \frac{1}{5x+3x^7} \cdot (5+21x^6)$ $y' = \frac{5+21x^6}{(5x+3x^7)}$ $\frac{5+21}{5+3} = \frac{26}{8} = \frac{13}{4}$

b, $y = 2 \cdot e^{3x+7}$

$y' = 2 \cdot e^{3x+7} \cdot 3$

$y' = 6e^{3x+7} = 6e^{10}$

1- $f(x) = 3x^6 - x^5 - 2x^4 + 2x - 2$

$f'(x) = 18x^5 - 5x^4 - 8x^3 + 2$

$f''(x) = 90x^4 - 20x^3 - 24x^2 + 2$

$f'''(x) = 360x^3 - 60x^2 - 48x$

$f^{IV}(x) = 1080x^2 - 120x - 48$

$f^{V}(x) = 2160x - 120$

$f(2) = 2160 \cdot 2 - 120 = 4200$,,

2- $f(t) = 2t^4 + 3t^2 - 6t$

$f'(t) = 8t^3 + 6t - 6$

$f''(t) = 24t^2 + 6$

$f(2) = 24 \cdot 2^2 + 6$

$f(2) = 102\ m/s^2$

3- $m = ?$
$f(x) = x^2 + 2x + 5$
$m = f'(x) = 2x + 2$
$m = 6$

$y = mx + b$
$13 = 6 \cdot 2 + b$
$13 - 12 = b$
$b = 1$

$y = mx + b$
$y = 6x + 1$

4- $f(x) = (x^2 \cdot \cotg x) - 1/x^2$
$u' \cdot v + u \cdot v'$

$(2x \cdot \cotg x) + (x^2 - \operatorname{cossec}^2 x) - x^{-2}$
$2x \cdot \cotg x - x^2 \operatorname{cossec} x + 2x^3$

5- a, $\frac{(3x^2+6)}{2x^2-7} = \frac{-66x}{(2x^2-7)^2}$

b, $(2 - x - 3x^2)^{12}$
$y'(x) = 12 \cdot (2 - x - 3x^2)^{11} \cdot (-1 - 9x^2)$
$y'(x) = (-12 - 108x^2) \cdot (2 - x - 3x^2)^{11}$

$7 - -1 = 8 \cdot 3 + b$
$-24 - 1 = b$
$b = -25$

$y = 8x - 25$

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9- $f(x) = 3x^3 + 2x^2 + 5x + 1$

$f(2) = 2^4 + 8 + 10 + 1 = 43$ (2,43)

$f'(x) = 9x^2 + 4x + 5$

$f'(2) = 36 + 8 + 5 = 49$

(2, 49)

$y = m \cdot x + b$

$43 = 49 \cdot 2 + b$

$43 - 98 = b$

$b = -45$

$y = 49x - 45$

&

10- $f(x) = 3x^3 + 5x^2 - 3x + 4$

$f'(x) = 9x^2 + 10x - 3$

$f''(x) = 18x + 10$

$f'(0) = 9 \cdot 0 + 10 \cdot 0 - 3$

$f'(0) = -3$ "

$f''(-3) = 18 \cdot (-3) + 10$

$f''(-3) = -54 + 10 = -44$ "

$f'(0) + f''(-3)$

$-3 - 44$

$-3 - (-44)$

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