

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

- (a) Plot?
- (b) $f'(x) = ?$
- (c) $f'(x) = 0 \Rightarrow x = ?$
- (d) $x = 4 \Rightarrow \alpha_{Tg(f)} = ?$
- (e) $x = 4 \Rightarrow f''(x) = ?, \alpha_{Tg(f')} = ?$

Probl. 2

- (a) $f(x) = x^2(4x - 3) \Rightarrow f'(x) = ?$
- (b) $f(x) = x^2(4x - 3) \Rightarrow f''(x) = ?$
- (c) $f(x) = x^2(4x - 3) \Rightarrow f'''(x) = ?$
- (d) $f(x) = x^2(4x - 3) \Rightarrow f''''(x) = f^{(4)}(x) = ?$

Probl. 3

- (a) $f(x) = x \ln(x) \Rightarrow f'(x) = ?$
- (b) $f(x) = x^2 \ln(x) \Rightarrow f'(x) = ?$
- (c) $f(x) = x e^x \Rightarrow f'(x) = ?$
- (d) $f(x) = \sin(x) \cos(x) \Rightarrow f'(x) = ?$

Probl. 4

- (a) $f(x) = \frac{x+1}{x^2} \Rightarrow f'(x) = ?$
- (b) $f(x) = \ln(2x+3) \Rightarrow f'(x) = ?$
- (c) $f(x) = \cos(2x+3) \Rightarrow f'(x) = ?$
- (d) $f(x) = \cos(x^4) \Rightarrow f'(x) = ?$