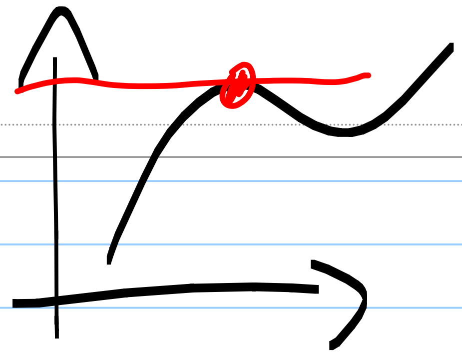
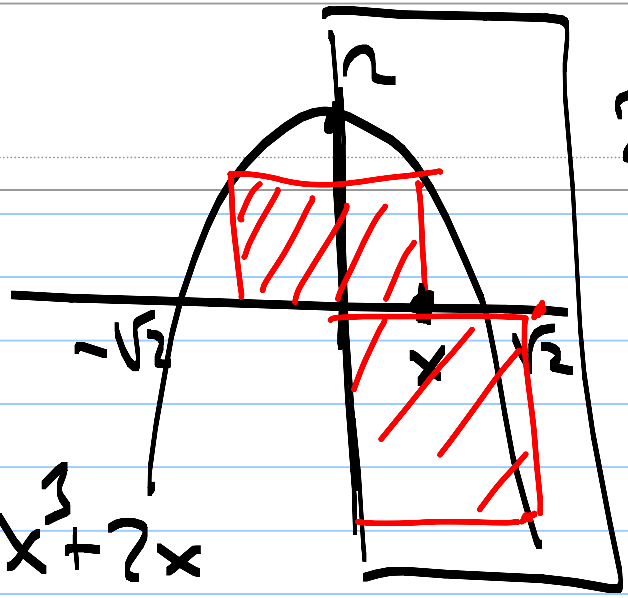
Nový nadpis 18.3.2013



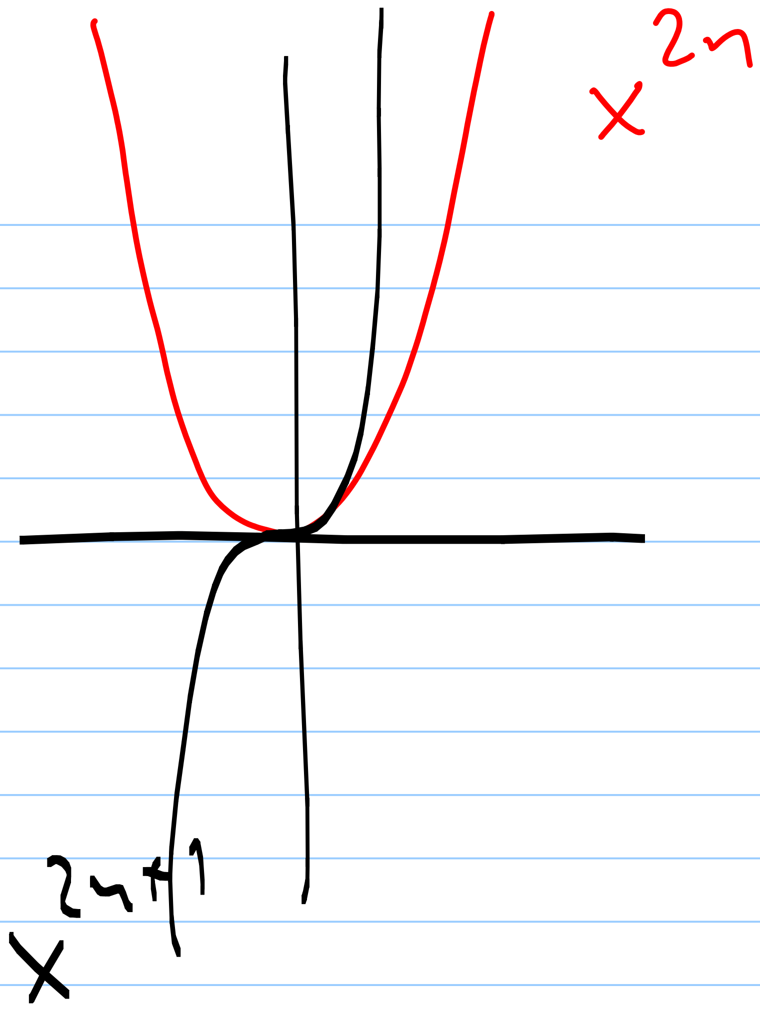


$$2 - x^2 = y$$

$$\boxed{P = x \cdot (2 - x^2)} = -x^3 + 2x$$

$$P' = -3x^2 + 2$$

$$\Rightarrow \; P' = 0 \text{ pro } x = \sqrt{\tfrac{2}{3}}$$


x^{2n}
x^{2n+1}

$$T_{k,a} f(x) = f(a) + f'(a)(x-a) + \dots + \frac{1}{k!} f^{(k)}(a)(x-a)^k$$

$$f(x) = T_{k-1,a} f(x) + R \,, \qquad R = \frac{1}{k!}\, r\, (x-a)^k$$

$\uparrow$ DEF!

$$\boxed{F(\xi) := \sum_{j=0}^{k-1} \frac{1}{j!} f^{(j)}(\xi)(x-\xi)^j + \frac{1}{k!}\, r\, (x-\xi)^k \,.}$$

$$F'(\xi) = f'(\xi) + \sum_{j=1}^{k-1} \left(\frac{1}{j!} f^{(j+1)}(\xi)(x-\xi)^j - \frac{1}{(j-1)!} f^{(j)}(\xi)(x-\xi)^{j-1} \right)$$

$$- \frac{1}{k!}\, r\, k (x-\xi)^{k-1} = \frac{1}{(k-1)!} f^{(k)}(\xi)(x-\xi)^{k-1} - \frac{1}{k!}\, r\, (x-\xi)^{k-1}$$

$$= \frac{1}{(k-1)!} (x-\xi)^{k-1} \left(f^{(k)}(\xi) - r \right)$$

$$\boxed{F(a) = F(x) = f(x)}$$ ✓

$$\left|f(x) - P_{k,a}(x)\right| = \frac{1}{(k+1)!}\left|f^{(k+1)}(c)(x-a)^{k+1}\right|$$

$$\boxed{\left|f^{(k+1)}(c)\right| \leq M}$$

$$c \in [a,x]$$

$$\leq \frac{M}{(k+1)!}\left|x-a\right|^{k+1}$$

$$\lim_{k \to \infty} M \frac{C^{k+1}}{(k+1)!} \longrightarrow 0$$

✓

$f(x) = e^{-1/x^2}$ 1) $\lim_{x\to 0} f(x) = 0$. C^0

$$\left(e^{-1/x^2}\right)' = e^{-1/x^2} \cdot 2x^{-3} \checkmark \quad x \neq 0$$

$$f'(0) = \lim_{x\to 0_+} \frac{e^{-1/x^2} - 0}{x} = \lim_{x\to 0_+} \frac{x^{-1}}{e^{1/x^2}}$$

$$\checkmark = \lim_{x\to 0_+} \frac{1}{2} \frac{x^{\cancel{-2}}}{e^{1/x^2} \cdot \cancel{x^{-3}}} = 0 \checkmark$$

$$f(x) = e^{-1/x^2}$$