

S 65

2) a)  $f'(x) = x - 2$

nB:  $0 = x - 2 \rightarrow \underline{x_E = 2}$

b)  $f'(x) = 3x^2 - 6x$

nB:  $0 = 3x^2 - 6x$   
 $0 = 3x(x - 2)$   
 $\downarrow \qquad \qquad \downarrow$   
 $\underline{x_{E_1} = 0} \quad \underline{x_{E_2} = 2}$

c)  $f'(x) = x^3 - 4x$

nB:  $0 = x^3 - 4x$   
 $0 = x(x^2 - 4)$   
 $\downarrow \qquad \qquad \downarrow$   
 $\underline{x_{E_1} = 0} \quad \underline{x_{E_{2,3}} = \pm 2}$

d)  $f'(x) = -4(x - 1) \cdot 1$

nB:  $0 = -4x + 4 \rightarrow \underline{x_E = 1}$

e)  $f'(x) = 2(x - 2) \cdot 1 - 1$

nB:  $0 = 2x - 4 - 1$   
 $0 = 2x - 5 \rightarrow \underline{x_E = \frac{5}{2}}$

f)  $f'(x) = 2(x - 3) \cdot 1$

nB  $0 = 2x - 6 \rightarrow \underline{x_E = 3}$

3) a)  $f'(x) = 3x^2 - 3$

nB  $0 = 3x^2 - 3$   
 $0 = x^2 - 1$

$\underline{x_{E_{1,2}} = \pm 1}$

$\rightarrow \underline{P(1|-6)}; \underline{P(-1|-2)}$

3) b)  $f'(x) = 3x^2 - 6$

NB:  $0 = 3x^2 - 6$

$0 = x^2 - 2$

$x_{E1/2} = \pm \sqrt{2}$

$\rightarrow P(-\sqrt{2} | 5,66); P(\sqrt{2} | -5,66)$

3) c)  $f'(x) = \frac{3}{5}x^2 + \frac{6}{5}x - \frac{9}{5}$

NB  $0 = 3x^2 + 6x - 9$

$0 = x^2 + 2x - 3$

$0 = (x-1)(x+3)$

$x_{E1} = 1$        $x_{E2} = -3$

$\rightarrow P(1 | -1); P(-3 | 5,4)$

4)  $f_1(x) = x^3 - 4x^2 + 3x$  TR!

$P_H(0,45 | 0,63); P_T(2,22 | -2,11)$

$f_2(x) = x^3 - 3x^2 + 3x$  TR!

keine Extrempunkte, bei  $x_E = 1$  Plateau