Kapitel 3.3

① $y = -x^2 + 3$

$f'(x) = -2x$

③ $y = \frac{4x^3}{3} - x$

$f'(x) = 1$

$f'\left(\frac{4x^3}{3}\right) = \left[\frac{u}{v}\right]' = \frac{u'v - uv'}{v^2} = \frac{12x^2 \cdot 3 - 4x^3 \cdot 0}{9} = \frac{36x^2}{9} = 4x^2$

$4x^3 = u = 12x^2$

$3 = v = 0$

⑤ $r = \underbrace{(x^2+1)}_{u}\underbrace{\left(x + 5 + \frac{1}{x}\right)}_{v}$

$r' = [u \cdot v]' = u'v + uv' = 2x \cdot \left(x + 5 + \frac{1}{x}\right) +$

$u' = 2x$

$v' = 1 + \frac{1}{x^2}$

$f'\left(\frac{1}{x}\right) = \left[\frac{u}{v}\right]' = \frac{u'v - uv'}{v^2} = \frac{0 \cdot x - 1 \cdot 1}{x^2} = \frac{1}{x^2}$

$u' = 0$

$v' = 1$

(7)

$$g(x) = \frac{x^2 - 4}{x + 0.5}$$

$$g'(x) = \frac{u'v - uv'}{v^2}$$

$u = x^2 - 4$ $\qquad$ $u' = 2x$

$v = x + 0.5$ $\qquad$ $v' = 1$

$$g'(x) = \frac{2x \cdot (x + 0.5) - 1 \cdot (x^2 - 4)}{(x + 0.5)^2} = \frac{2x^3 + x - x^2 - 4}{x^2 + x + 0.25} =$$