JAWABAN:

1. a . f(x) = $\frac{1}{2}x^{\frac{3}{2}}$

f'(x) = $3\sqrt{x}$

b. f(x) = $6x^{\frac{3}{2}}$

f'(x) = $9\sqrt{x}$

c. f(x) = $6\sqrt{x^3}$

f'(x) = $9x^{\frac{1}{2}}$

d. f(x) = $12\sqrt[3]{x^4}$

f'(x) = $24x^{\frac{1}{3}}$

e. f(x) = $5(2x^2 + 4x^2)$

f'(x) = $20x^2 + 20$

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

f'(x) = $12x^3 + 4x - 5$

g. 1. f(x) = $\frac{x}{x+2}$

f'(x) = $\frac{(x+2)-(x+2)}{(x+2)^2}$

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

2 .f(x)= $\frac{1}{x^2+1}$

f'(x)= $\frac{0.(x^2+1)-(1).(2x)}{(x^2+1)^2}$

= $\frac{-2x}{x^4+2x^2+1}$

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

f'(x)= -4.($x^3 - 2)^{-4-1}.(3x^2)$

=-$12x^2.(x^3 - 2)^{-5}$

= $\frac{-12x^2}{(x^3+2)^5}$

b. f(x)= $(x^4 - 6x^3 + 10x)^{68}$

f'(x)= $68.(x^4 - 6x^3 + 10x)^{67}.(4x^3 - 18x^2 + 10)$

c. $f(x)= (x+10)^9$

$= 9(x+10)^8$

3. $F(x)= 9x^2 + 6x^3 + 8$

Turunan 1 $15x^4 - 18x^2 + 8$

Turunan 2 $60x^3 - 36x$

Turunan 3 $180x^2 - 36$

Turunan 4 $360x$

4.$y= \left(\frac{3x^2-2}{x+3}\right)^3$

$d(y)/dx = \frac{d\left(\frac{3x^2-2}{x+3}\right)^3}{dx}$

$dy/dx= 3\left(\frac{3x^2-2}{x+3}\right)^2 . \left(\frac{6x^2+18x-3x^2+2}{(x+3)^2}\right)$

$dy/dx= 2\left(\frac{3x^2-2}{(x+3)^2}\right)^2 . \frac{3x^2+18+2}{(x+3)^2}$

$dy/dx= \left(\frac{(9x^4-12x^2+4)(9x^2+54+6)}{(x+3)^4}\right)$

5. a. $g(x) = 13x^3-32x^2+2x-6$ ditanya nilai $g'(0) = ?$

$g'(x) = 39x^2-64x+2$

$g'(2) = 39(0)^2-64(0)+2 = 0$

$g'(x) = 0$

b. $f(x) = (\frac{3x+1}{x^2+2})^3$ ditanya $f'(3) = ?$

$f'(x) = 3(\frac{3x+1}{x^2+2})^2(\frac{(3x^2+6)-(6x^2+2x)}{(x^2+2)^2})$

$f'(3) = 3(\frac{3(3)+1}{(3)^2+2})^2(\frac{(3(3)^2+6)-(6(3)^2+2(3))}{((3)^2+2)^2})$