① $Df(-1) = \lim\limits_{x \to -1} \frac{f(x) - f(-1)}{x - (-1)} = \lim\limits_{x \to -1} \frac{4x^2 - 4}{x + 1} = \frac{0}{0}$

4 $= \lim\limits_{x \to -1} \frac{4(x^2 - 1)}{x + 1} = \lim\limits_{x \to -1} \frac{4(x-1)\cancel{(x+1)}}{\cancel{x+1}} = -8$

② f is differentieerbaar in $\mathbb{R} \setminus \{1\}$
In $x = 1$ heeft f een knikpunt, dus bestaat
3 de afgeleide niet. Er kunnen in dit punt 2
raaklynen getekend worden, de linkerafgeleide
is verschillend v/d rechterafgeleiden

1 ③ a) $f(-1) = 10$

1 b) $Df(-1) = -2$

1 c) $f(2) = 13$ $\quad \frac{f(2) - f(-1)}{2 - (-1)} = \frac{13 - 10}{3} = \frac{3}{3} = 1$

d) $t: \; y - f(-1) = -2(x - (-1))$

$y - 10 = -2(x + 1)$

$y = -2x - 2 + 10$

2 $y = -2x + 8$

e) $x = 0$ want in de top is de raaklijn

1 horizontaal, dus $Df(0) = 0$

④ a) $D\left(5x^6-\sqrt{2}\,x^4+7x^2+6x-9\right)$

2 $= 30x^5-4\sqrt{2}\,x^3+14x+6$

b) $D\left(x^5\cdot\cos x\right) = \cos x \; Dx^5 + x^5 \; D\cos x$

$= \cos x \cdot 5x^4 + x^5 \cdot (-\sin x)$

3 $= 5x^4\cos x - x^5\sin x$

c) $D\left(\dfrac{4x^3+2x-3}{7x^2+5x}\right)$

$$= \frac{(7x^2+5x)\cdot D(4x^3+2x-3)-(4x^3+2x-3)D(7x^2+5x)}{(7x^2+5x)^2}$$

4 $$= \frac{(7x^2+5x)\cdot(12x^2+2)-(4x^3+2x-3)\cdot(14x+5)}{(7x^2+5x)^2}$$

$$= \frac{84x^4+60x^3+14x^2+\cancel{10x}-\left(56x^4+20x^3+28x^2+\cancel{10x}-42x-15\right)}{(7x^2+5x)^2}$$

$$= \frac{28x^4+40x^3-14x^2+42x+15}{(7x^2+5x)^2}$$

d) $D\sin^2(8x) = 2\sin(8x)\,D\sin 8x$

3 $= 2\sin(8x)(\cos 8x)\cdot 8$

$= 16\sin 8x\cdot\cos 8x$

$= 8\cdot\sin 16x$