26. $f(t) = t^4 - 5t$

$$f'(a) = \lim_{h\to 0} \frac{f(a+h) - f(a)}{h}$$

$$= \lim_{h\to 0} \frac{(a+h)^4 - 5(a+h) - (a^4 - 5a)}{h}$$

$$= \lim_{h\to 0} \frac{\cancel{a^4} + 4a^3\cancel{h} + 6a^2h^{\cancel{2}} + 4ah^{\cancel{3}} + h^{\cancel{4}} \cancel{-5a} - 5\cancel{h} - \cancel{a^4} \cancel{+5a}}{\cancel{h}}$$

$$= \lim_{h\to 0} 4a^3 + 6a^2h + 4ah^2 + h^3 - 5 = \boxed{4a^3 - 5}$$

28. $f(x) = \dfrac{x^2+1}{x-2}$

$$\lim_{h\to 0} \frac{\left(\dfrac{(x+h)^2+1}{(x+h)-2} - \dfrac{x^2+1}{x-2}\right)(x+h-2)(x-2)}{(h)(x+h-2)(x-2)}$$

$x^2+2xh+h^2+1$

$$\lim_{h\to 0} \frac{[(x+h)^2+1](x-2) - (x^2+1)(x+h-2)}{h(x+h-2)(x-2)}$$

$$= \lim_{h\to 0} \frac{\cancel{x^3} \cancel{+2x^2h} + xh^2 \cancel{+x} \cancel{-2x^2} - 4x\cancel{h} - 2h^{\cancel{2}} \cancel{-2} \cancel{-x^3} \cancel{-x^2h} \cancel{+2x^2} \cancel{-x} - 1 \cancel{-h} \cancel{+2}}{\cancel{h}(x+h-2)(x-2)}$$

$$= \lim_{h\to 0} \frac{x^2+xh-4x-2h-1}{(x+h-2)(x-2)} = \frac{x^2-4x-1}{(x-2)^2}$$

32. $\lim_{h\to 0} \dfrac{\sqrt[4]{16+h}-2}{h}$

$\sqrt[4]{16}$? ✓

$f(x)=\sqrt[4]{x}$, $a=16$

$$\lim_{h\to 0}\frac{f(a+h)-f(a)}{h}$$

34. $\lim_{x\to\pi/4} \dfrac{\tan x - 1}{x - \pi/4}$

$f(x)=\tan x$

$a=\frac{\pi}{4}$

$$f'(a)=\lim_{x\to a}\frac{f(x)-f(a)}{x-a}$$

36. $\lim_{t \to 1} \dfrac{t^4 + t - 2}{t - 1}$

$f(t) = t^4 + t$

$a = 1$