Find $\frac{dy}{dx}$: Extra derivative practice

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

② $y = x^2 \sec 5x$

③ $y = \ln(\sin x + 4x^2)$

④ $y = 4e^{-x^2}$

⑤ $y = (\ln x)^5$

⑥ $y = \frac{\sin x}{x^2}$

⑦ $y = \tan(4-2x)^3$

⑧ $y = \cos^2(-6x^2+2)$

⑨ $y = \sin 4x$

Derivatives from Known Values

Use the table below to calculate the value of each of the derivatives at the indicated value. If the derivative does not exist for some reasonl, say why.

x	f(x)	g(x)	h(x)	u(x)	f'(x)	g'(x)	h'(x)	u'(x)
-1	-1	-4	-2	2	-1	-6	-4	0
0	-6	-10	-3	-1	-2	-10	-6	9
1	-8	-6	8	-9	-8	-7	0	-9

1. $w(x) = f(x) \cdot g(x) \quad w'(0)$

2. $w(x) = g(x) \cdot h(x) \cdot u(x) \quad w'(1)$

3. $w(x) = (h(x))^3 \quad w'(-1)$

4. $w(x) = u(g(x)) \quad w'(1)$

5. $w(x) = f(g(h(x))) \quad w'(-1)$

6. $w(x) = \dfrac{f(x)}{g(x)} \quad w'(1)$

7. $w(x) = \dfrac{(u(x))^3}{h(x)} \quad w'(0)$

8. $w(x) = \left(\dfrac{h(x) \cdot g(x)}{[f(x)]^3}\right)^3 \quad w'(-1)$

9. $w(x) = u(f(x))^2 \cdot h(g(x)) \quad w'(0)$

10. $w(x) = g\left([f(x^2)]\right) \quad w'(-1)$

11. $w(x) = \dfrac{f(x) \cdot g(x) \cdot h(x)}{[h(x)]^2 + u(x)} \quad w'(1)$

12. $w(x) = \sin(f(f(x))) \quad w'(0)$