

X	f(x)	f'(x)	g(x)	g'(x)
0	2	1	5	-4
1	3	2	3	-3
2	5	3	1	-2
3	10	4	0	-1

1. Find the derivative of $f + 2g$ at $x=3$

- a. -2
- b. 2
- c. 7
- d. 8
- e. 10

2. Find the derivative of $f \cdot g$ at $x=2$

- a. -20
- b. -7
- c. -6
- d. -1
- e. 13

3. Find the derivative of $\frac{f(x)}{g(x)}$ at $x=0$

- a. $-\frac{13}{4}$
- b. $-\frac{13}{25}$
- c. $-\frac{13}{25}$
- d. $\frac{13}{16}$
- e. $\frac{13}{4}$

4. Find the derivative of $\sqrt{f(x)}$ at $x=3$

- a. $\frac{1}{4}$
- b. $\frac{1}{2\sqrt{10}}$
- c. 2
- d. $\frac{2}{\sqrt{10}}$
- e. $4\sqrt{10}$

5. Find the derivative of $f(g(x))$ at $x=1$

- a. -12
- b. -6
- c. 4
- d. 6
- e. 12

6. Find the derivative of $f(x^3)$ at $x=1$

- a. 2
- b. 6
- c. 8
- d. 12
- e. 54

7. Find the derivative of $\frac{1}{g}$ at $x=1$

- a. $-\frac{1}{2}$
- b. $-\frac{1}{3}$
- c. $-\frac{1}{9}$
- d. $\frac{1}{9}$
- e. $\frac{1}{3}$

8. The derivative of $y = \frac{2-x}{3x+1}$ is:
- $-\frac{7}{(3x+1)^2}$
 - $\frac{6x-5}{(3x+1)^2}$
 - $-\frac{9}{(3x+1)^2}$
 - $\frac{7}{(3x+1)^2}$
 - $\frac{7-6x}{(3x+1)^2}$
13. Find the derivative of $y = (3x^4 + 5)^{10}$
14. Find the derivative of $\sqrt{\frac{3x-4}{x+1}}$
15. Find the derivative of $y = x^4 \sin(x^2)$
16. Find the derivative of $y = \frac{x+5}{\tan x}$
17. Find the derivative of $y = \sqrt{3} \sin t$
18. Find y'' if $y = (x^2 + 5)^5$
19. Find the values of x for which the graph of $y = (2x + 1)^3$ has a tangent line which is perpendicular to the line $x + 24y = 48$
20. The function $s(t) = t^3 - 6t^2 - 15t + 4$ describes the position of a particle in motion along a line during the time interval $-2 \leq t \leq 10$, with s measured in feet and t measured in seconds.
- Find the velocity function and the acceleration function.
 - Find the value of the velocity at the instant(s) when the acceleration is zero.
 - Find the net displacement of the particle during the indicated time interval.
 - Find the total distance traveled by the particle during the indicated time interval.