Find the derivative for each function below.

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1. $y = \ln 8x$

2. $y = \frac{3}{x^7}$

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3. $a(x) = 12x^{\frac{2}{7}}$

4. $f(x) = \ln[(8x - 5)(x^3 - x)^7]$

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5. $b(x) = \sin^7 x$

    Also find $b'\left(-\frac{\pi}{6}\right)$ for this one.

6. $c(x) = \sec(x^7)$

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7. $d(x) = \sin(7x)$

8. $e(x) = 7 \tan x$

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9. $y = \sqrt{\sec(3x)}$

10. $y = \sqrt{25x}$

    Also find $y'(4)$ for this one.

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

12. $f(x) = \frac{x^3 - 5x^2}{4x - 1}$

13. $g(x) = \frac{3 \csc x}{x^2 - 4}$

14. $f(x) = 4 \csc x$
Also find $f'\left(\frac{4\pi}{3}\right)$ for this one.

15. $j(x) = 4x \cos x$

16. $k(x) = 4x^2 \csc x$

17. $p(x) = 4x \cot 4x^2$

18. $q(x) = \csc^2 4x - \sin^2 3x$

19. Find the instantaneous rate of change at $x = \frac{\pi}{6}$ given $y(x) = \cos 2x$.

20. Find the average rate of change of $y(x) = \cos 2x$ over the interval $\left[0, \frac{\pi}{3}\right]$.

If $h(x) = f(x)g(x)$, $j(x) = \frac{g(x)}{f(x)}$, $k(x) = f(g(x))$, $m(x) = \frac{f(x)}{g(x)}$, $n(x) = g(f(x))$, and values of $f(x)$, $g(x)$ and their derivatives are given in the table below, evaluate the following expressions.

x	0	1	2	3	4	5	6	7	8	9	10
$f(x)$	2	4	6	8	10	-8	-6	-4	-2	4	6
$f'(x)$	8	10	8	6	4	2	1	3	5	7	10
$g(x)$	1	3	5	7	9	7	5	3	1	3	5
$g'(x)$	0	2	4	6	8	-2	-4	-5	1	2	3

21. $h'(2)$

22. $n'(0)$

23. $j'(3)$

24. $k'(7)$

25. $n'(1)$

26. $j'(7)$

27. $m'(3)$

28. $k'(9)$