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$y = ax^n$ $\quad y' = a \cdot n x^{n-1}$ $\quad f(x) = \sin x$ $\quad f'(x) = \cos x$ $\quad y = \cos x$ $\quad \frac{dy}{dx} = -\sin x$

Find the derivative.

(6) $y = x^{16}$
$y' = 16x^{15}$

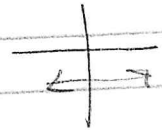
(8) $y = \frac{1}{x^8} = x^{-8}$
$y' = -8x^{-9} = \frac{-8}{x^9}$

(10) $g(x) = 4\sqrt{x} = x^{1/4}$
$g'(x) = \frac{1}{4}x^{-3/4} = \frac{1}{4x^{3/4}}$

(12) $g(x) = 3x - 1$
$g'(x) = 3$

(14) $y = t^2 + 2t - 3$
$y' = 2t + 2$

(4) $y = -9$
$y' = 0$



(22) $y = 7 + \sin x$
$y' = \cos x$

(20) $g(t) = \pi \cos t$
$g'(t) = -\pi \sin t$

Find the slope of the function at (x, y)

(34) $y = 3x^3 - 10$ at $(2, 14)$
$y' = 9x^2$
$= 9 \cdot 2^2$
$= 36$

(38) $g(t) = -2\cos t + 7$ at $(\pi, 7)$
$g'(t) = 2 \sin t$
$= 2 \sin \pi$
$= 0$

Find the derivative.

(41) $f(x) = \frac{x^3 - 6}{x^2} = \frac{x^3}{x^2} - \frac{6}{x^2} = x - 6x^{-2}$

$f'(x) = 1 + 12x^{-3} = 1 + \frac{12}{x^3}$ OR $\frac{x^3 + 12}{x^3}$

(46) $h(x) = \frac{2x^2 - 3x + 1}{x} = \frac{2x^2}{x} - \frac{3x}{x} + \frac{1}{x} = 2x - 3 + x^{-1}$

$h'(x) = 2 - 1x^{-2} = 2 - \frac{1}{x^2}$ or $\frac{2x^2 - 1}{x^2}$

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

$f'(x) = \frac{-2}{3}x^{-4/3} - 3\sin x$

$= \frac{-2}{3x^{4/3}} - 3\sin x$