

Section 2.4 day 2

Ex: Find the eqn of the tangent line to the graph of f at the given pt.

$$f(x) = (9 - x^2)^{2/3} \quad \text{pt. } (1, 4)$$

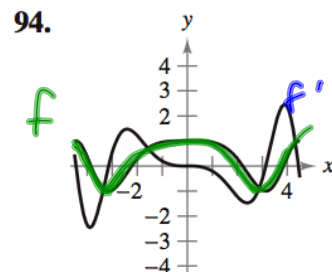
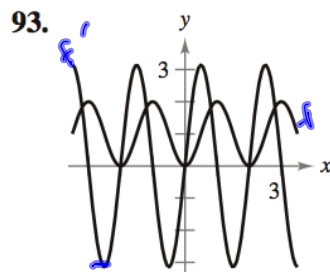
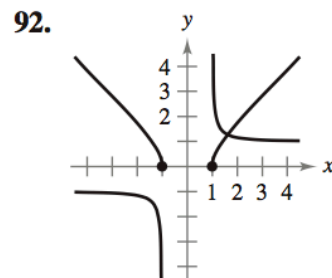
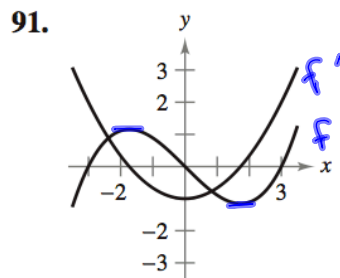
$$f'(x) = \frac{2}{3}(9 - x^2)^{-1/3}(-2x)$$

$$\begin{aligned} f'(1) &= \frac{2}{3}(9 - 1)^{-1/3}(-2) \\ &= \frac{2}{3}(8)^{-1/3}(-2) \\ &= \frac{2}{3} \cdot \frac{1}{2} \cdot -2 = -\frac{2}{3} \end{aligned}$$

eqn. of tangent

$$y - 4 = -\frac{2}{3}(x - 1)$$

In Exercises 91–94, the graphs of a function f and its derivative f' are shown. Label the graphs as f or f' and write a short paragraph stating the criteria used in making the selection. To print an enlarged copy of the graph, select the MathGraph button.



98. **Think About It** The table shows some values of the derivative of an unknown function f . Complete the table by finding (if possible) the derivative of each transformation of f .

(a) $g(x) = f(x) - 2$

(b) $h(x) = 2f(x)$

(c) $r(x) = f(-3x)$

(d) $s(x) = f(x + 2)$

x	-2	-1	0	1	2	3
$f'(x)$	4	$\frac{2}{3}$	$-\frac{1}{3}$	-1	-2	-4
$g'(x)$	4	$\frac{2}{3}$	$-\frac{1}{3}$	-1	-2	-4
$h'(x)$	8	$\frac{4}{3}$	$-\frac{2}{3}$	-2	-4	-8
$r'(x)$	NP	12	1	NP	NP	NP
$s'(x)$	$-\frac{1}{3}$	-1	-2	-4	NP	NP

d.) $S'(x) = f'(x+2)(1)$
 $S'(-2) = f'(0)$
 $S'(-1) = f'(1)$

a.) $g'(x) = f'(x)$
 $g'(-2) = f'(-2)$

b.) $h'(x) = 2f'(x)$
 $h'(-2) = 2f'(-2)$

c.) $r'(x) = f'(-3x) \cdot (-3)$
 $r'(-2) = f'(6) \cdot (-3)$
 $r'(-1) = f'(3) \cdot (-3)$
 $r'(0) = f'(0) \cdot (-3)$
 $r'(1) = f'(-3) \cdot (-3)$