MCS21 Homework 24

In 1 – 2, find $\frac{d^2y}{dx^2}$.

1. $y = 5x^4 - 4x^3 + 6x - 8$

2. $y = 2\left(x^2 - 45\right)^5$

In 3 – 4, find y'''.

3. $y = \frac{1}{x}$

4. $y = ax^3 + bx + c$ (a, b, c constant).

5. If $f(x) = \left(1 + \frac{x}{20}\right)^5$, find the value of $f''(40)$.

6. Given that $f(x) = x^2 \cdot g(x)$, $g(2) = 3$, $g'(2) = -1$, and $g''(2) = -2$, find the value of $f''(2)$.

7. A table of values for f, g, f', and g' is given.

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

a) If $h(x) = f(g(x))$, find $h'(1)$.

b) If $H(x) = g(f(x))$, find $H'(1)$.

c) If $F(x) = f(f(x))$, find $F'(2)$.

d) If $G(x) = g(g(x))$, find $G'(3)$.

8. Find $\frac{d^2y}{dx^2}$.

(a) $y = \left(x^3 - 8\right)^6$

(b) $y = 3\left(x^2 - 18\right)^{50}$