Higher-Order Derivatives

In problems 1-6, Find the second derivative of the function.

1. $f''(x) = 0$	2. $f''(x) = 2$
3. $f''(x) = 6x - 6$	4. $f''(x) = \dfrac{8}{9x^5}$
5. $f''(x) = 180(3x-1)^3$	6. $f''(x) = \dfrac{-20}{(x+3)^3}$

In problems 7-9, Find the third derivative of the function.

7. $f'''(x) = 24x + 12$	8. $f'''(x) = 48(x+2)(5x^2 + 10x + 4)$ or $f'''(x) = 48(5x^3 + 20x^2 + 24x + 8)$
9. $f'''(x) = \dfrac{-28}{27x^{10/3}}$	

In problems 10-11, Find the given value.

10. $f''(2) = 4$	11. $f''(3) = \dfrac{-9}{500}$

In problems 12-13, Find the higher-order derivative.

12. $f''(x) = 2x - 5$	13. $f^{(4)}(x) = \dfrac{5}{2\sqrt{x+3}}$

In problems 14-15, Find the second derivative and solve the equation f''(x) = 0.

14. $f''(x) = x + 4$ $x = -4$	15. $f''(x) = \dfrac{x(2x^2 - 12)}{(x^2 - 4)^{3/2}}$ $x = 0, x = \pm\sqrt{6}$