Find the derivative and simplify:

150. $f(x) = \dfrac{3x+2}{x^2-5x+1}$

151. $g(x) = \dfrac{\sqrt{x}}{3x+5}$

152. $h(x) = x^2 \tan(3x) + \dfrac{\sqrt{x}}{x^2}$

153. Find the equation of the tangent line to $y = \dfrac{x^2}{\sqrt{x}} + 2$ at the point where $x=4$. (Note for this problem you must find both the y-coordinate of the point, and the slope)

Find the derivative and simplify:

160. $f(x) = \sqrt{\dfrac{x}{4x+1}}$

161. $g(x) = \dfrac{(2x+4)^5}{(3x-5)^4}$

162. $h(x) = \sec^2(5x)$

163. $y^2 + 3xy + 2x^2 = 4x$

Find the derivative and simplify:

170. $y = \dfrac{3x-2}{(4x+1)^3}$

171. $y = 4x^5 \csc 6x$

172. $y = \left(x^2 + \sin^2 x\right)^6$

173. $y = \dfrac{4}{x} - \dfrac{x}{3} + 2x\sqrt{x} - \dfrac{x}{\sqrt{x}}$

174. Find the tangent line to $y = \sin\left(\dfrac{\pi x}{12}\right)$ when x=2 (you should be giving me an exact number for the y-coordinate and the slope, not a calculator number)

Find the derivative and simplify

180. $y = 3x^2 + 12\sqrt{2x^3 - 3x^2}$

181. $y = \dfrac{0.1x^4 + .5x^2 - 5x + 13}{x}$

182. a. Find the formula for the rate of change of the volume of a spherical balloon ($V = \dfrac{4}{3}\pi r^3$) with respect to its radius.
b. Find the rate of change of the volume of the balloon when the radius is 3 in.
c. Find the rate of change of the volume of the balloon when the radius is 4 in.

183. $x\sin(y) = x^2 + y^3$