

Derivatives Compute-o-rama — Answers

Keep in mind that these answers are the ones I got after simplifying. Your answer may be correct even if it doesn't quite look like mine, since you need not simplify.

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

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

2. $g(x) = \frac{x^2 + 1}{x}$

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

3. $h(r) = \frac{4}{3}\pi r^3$

$$h'(r) = 4\pi r^2$$

4. $i(x) = e^x + x^e$.

$$i'(x) = e^x + ex^{e-1}$$

5. $j(r) = \frac{r^2}{2r + 1}$

$$j'(r) = \frac{2r^2 + 2r}{(2r + 1)^2}$$

6. $k(x) = e^{\pi x}$

$$k'(x) = \pi e^{\pi x}$$

7. $\ell(t) = te^{5-2t}$

$$\ell'(t) = (1 - 2t)e^{5-2t}$$

8. $m(x) = \sin(120\pi x)$

$$m'(x) = 120\pi \cos(120\pi x)$$

9. $n(x) = 2x \sin(3x)$

$$n'(x) = 2 \sin(3x) + 6x \cos(3x)$$

10. $m(t) = 5e^{-.0001t}$

$$m'(t) = -.0005e^{-.0001t}$$

11. $p(t) = (t^3 + 1)^{100}$

$$p'(t) = 300t^2(t^3 + 1)^{99}$$