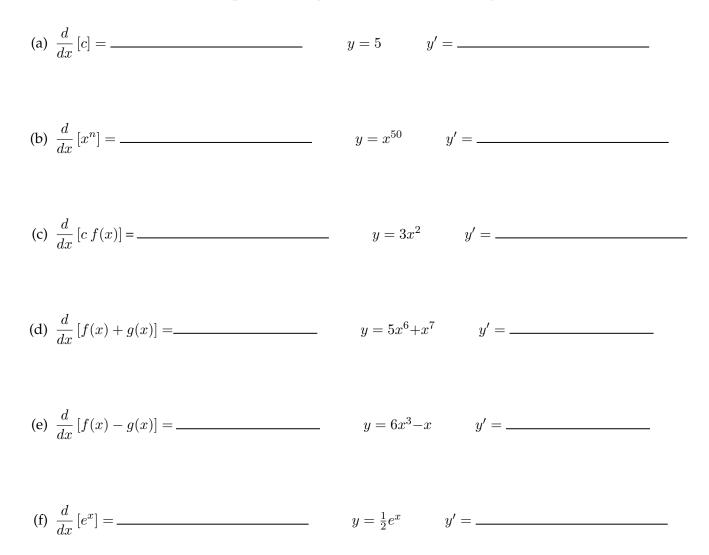
## Section 3.1 Derivatives of Polynomials and $e^x$

1. Fill in the derivative rules. Then practice using each rule to find y' if y is given.



2. Compute derivatives of the following functions using derivative rules. **Do not simplify your answers.** (If you already know what these are, DO NOT USE THE PRODUCT RULE, THE QUO-TIENT RULE OR THE CHAIN RULE. If you don't know what they are, presumably you won't be using them either!)

(a) 
$$f(x) = (x-2)(2x+3)$$

(b) 
$$g(x) = \frac{x^2}{2} - \frac{2}{x^2} + \frac{1}{\sqrt{2}}$$

(c) 
$$f(t) = \sqrt{t} - e^t + t^{0.3}$$

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

(e) 
$$V(r) = \frac{4}{3}\pi r^3$$

(f) 
$$f(x) = e^{x-3}$$

(g) 
$$H(r) = a^2 r^2 + br + c$$

3. At what point(s) on the curve  $y = 3x + x^3$  is the tangent to the curve parallel to the line y = 6x - 5?