

x'

$$1. y = (3x^{1.5} - 1.5x^2)(12x^3 + 135)$$

$$\frac{dy}{dx} = (4.5x^{0.5} - 3x)(12x^3 + 135) + (3x^{1.5} - 1.5x^2)(36x^2)$$

$$2. y = (6t^4 - 3t^{2.5} + 800)(t^{3.5} + 25t^2)$$

$$\frac{dy}{dt} = (24t^3 - 7.5t^{1.5})(t^{3.5} + 25t^2) + (6t^4 - 3t^{2.5} + 800)(3.5t^{2.5} - 50t^{-3})$$

$$3. f(t) = \frac{11t^3 - 8t^{1.5}}{4t^{2.2} + 13}$$

$$f'(t) = \frac{(4t^{2.2} + 13)(33t^2 - 12t^{0.5}) - (8 \cdot 8t^{1.2})(11t^3 - 8t^{1.5})}{(4t^{2.2} + 13)^2}$$

$$4. f(x) = \frac{41x^{0.7} - 100x^{1.4}}{3600 + 8x^{2.5}}$$

$$f'(x) = \frac{(3600 + 8x^{2.5})(28.7x^{-0.3} - 140x^{0.4}) - (41x^{0.7} - 100x^{1.4})(20x^{1.5})}{(3600 + 8x^{2.5})^2}$$

$$5.) p = 12 - 0.002x.$$

$$C(x) = 4.25x + 3250$$

$$(a) R(x) = x \cdot p$$

$$= x(12 - 0.002x) = 12x - 0.002x^2$$

$$(b) R'(x) = 12 - 0.004x$$

$$(c) R(1801) = 12(1801) - 0.002(1801)^2$$

$$= 21612$$

$$(d) P(x) = R(x) - C(x)$$

$$= 12x - 0.002x^2 - (4.25x + 3250)$$

$$= -0.002x^2 + 7.75x - 3250$$

$$(e) P'(x) = -0.004x + 7.75$$

$$(f) P(1000) = -0.002(1000)^2 + 7.75(1000) - 3250$$

$$= 2500$$