Derivative Pratice SOLUTIONS!
(can't have enough practice)

If you can find the derivatives of the following functions you will be doing great!!!

(1) $f(x) = 2x^3 - 3x + 5$

$$6x^2 - 3$$

(2) $g(x) = 3x^5 - 4x^7 + 6$

$$15x^4 - 28x^6$$

(3) $h(x) = e^{x^2 + 5x}$

$$(2x + 5)e^{x^2 + 5x}$$

(4) $P(q) = \ln(x^3 + 5)$

$$\frac{3x^2}{x^3 + 5}$$

(5) $R(q) = (\ln(q + 2))^2$

$$\frac{2\ln(q + 2)}{q + 2}$$

(6) $C(q) = q^3 + 3q - e^{2q^2 - 5q}$

$$3q^2 + 3 - (4q - 5)e^{2q^2 - 5q}$$

(7) $D(p) = p^7 - 7p^2 + 9p - 6 + e^{p^9 - p^7 + p^6}$

$$7p^6 - 14p + 9 + (9p^8 - 7p^6 + 6p^5)e^{p^9 - p^7 + p^6}$$

(8) $S(p) = p^3 + 3p + \left(e^{2p^2}\right)^3 + 700000$

$$3p^2 + 3 + 12pe^{6p^2}$$

(9) $f(x) = \frac{x^3 - 3x^2}{2x^7 - 7x}$

$$\frac{(3x^2 - 6x)(2x^7 - 7x) - (x^3 - 3x^2)(14x^6 - 7)}{(2x^7 - 7x)^2}$$

(10) $g(x) = 3x^3 e^{2x}$

$$9x^2 e^2 x + 6x^3 e^{2x}$$

(11) $h(x) = \frac{x^7 - 7x}{x^4 e^{x^5}}$

$$\frac{(7x^6 - 7)(x^4 e^{x^5}) - (x^7 - 7x)(4x^3 e^{x^5} + 5x^8 e^{x^5})}{x^8 e^{2x^5}}$$

(12) $P(q) = \frac{15q^3 - 8q + 8000000000}{e^{q^3+8q}}$

$$\frac{(45q^2 - 8)(e^{q^3+8q}) - (15q^3 - 8q + 8000000000)((3q^2 + 8)e^{q^3+8q})}{e^{2q^3+16q}}$$

(13) $R(q) = 2000q^{800} + 5000q^{798080} + 1.7$

$$1600000q^{799} + 3990400000q^{798079}$$

(14) $C(q) = \frac{q+2}{800q-1}$

$$\frac{(800q - 1) - ((q+2)800)}{(800q - 1)^2}$$

(15) $D(p) = p^3 - 7p - 789456123216547895867412 3$

$$3p^2 - 7$$

(16) $S(p) = \frac{pe^{p^7-7}}{p^6-8p}$

$$\frac{(e^{p^7-1} + 7p^7 e^{p^7-1})(p^6 - 8p) - (pe^{p^7-1})(6p^5 - 8)}{(p^6 - 8p)^2}$$

(17) $f(x) = \frac{2x^3 - 3x + 5}{3x^5 - 4x^7 + 6}$

$$\frac{(6x^2 - 3)(3x^5 - 4x^7 + 6) - (2x^3 - 3x + 5)(15x^4 - 28x^6)}{(3x^5 - 4x^7 + 6)^2}$$

(18) $g(x) = (\ln(x^3 + 5)) \cdot \left(\frac{q+2}{800q-1}\right)$

$$\frac{3x^2}{x^3 + 5} \cdot \frac{q+2}{800q-1} + (\ln(x^3 + 5)) \cdot \frac{(800q - 1) - (q+2)(800)}{(800q - 1)^2}$$

(19) $h(x) = 89x$

$$89$$

(20) $P(q) = \frac{3q^5 - 4q^7 + 6}{2q^3 - 3q + 8}$

$$\frac{(15q^4 - 28q^6)(2q^3 - 3q + 8) - (3q^5 - 4q^7 + 6)(6q^2 - 3)}{(2q^3 - 3q + 8)^2}$$

(21) $R(q) = (2q^3 - 3q + 5) \cdot (3q^5 - 4q^7 + 6)$

$$(4q^2 - 3)(3q^5 - 4q^7 + 6) + (2q^3 - 3q + 5)(15q^2 - 28q^6)$$

(22) $f(x) = \frac{1}{\sqrt{x}}$

$$\frac{-0.5}{x^{\frac{3}{2}}}$$

(23) $g(x) = \frac{1}{x^3}$

$$\frac{-3}{x^4}$$

(24) $h(x) = \frac{3}{x^3} + x^4 + 7x^8$

$$\frac{-9}{x^4} + 4x^3 + 56x^7$$