1. p80e16 - Calcula las siguientes derivadas:

   (a) $y = 2x$

Sol: $y' = 2$

   (b) $y = 3x - 5$

Sol: $y' = 3$

   (c) $y = 7x^5 - 3x^2 + x + 2345$

Sol: $y' = 35x^4 - 6x + 1$

   (d) $y = x(x+2)$

Sol: $y' = 2x + 2$

   (e) $y = (x-1)(x+1)$

Sol: $y' = 2x$

   (f) $y = \frac{5x^4}{7} - \frac{x^3}{55} - \frac{3x^2}{4} + x - 1255$

Sol: $y' = \frac{20x^3}{7} - \frac{3x^2}{55} - \frac{3x}{2} + 1$

   (g) $y = (x+1)^3$

Sol: $y' = 3(x+1)^2$

   (h) $y = (x^3 + x + 1)^4$

Sol: $y' = (12x^2 + 4)(x^3 + x + 1)^3$

   (i) $y = -(3x-1)^2 + (3x+1)^2$

Sol: $y' = 12$

   (j) $y = \frac{1}{x^2}$

Sol: $y' = -\frac{2}{x^3}$

   (k) $y = \frac{1}{x+1}$

Sol: $y' = -\frac{1}{(x+1)^2}$

   (l) $y = \frac{x^2 - 3}{x^3 + x}$

Sol: $y' = \frac{-x^4 + 10x^2 + 3}{x^2(x^4 + 2x^2 + 1)}$

   (m) $y = \frac{x+1}{x}$

Sol: $y' = -\frac{1}{x^2}$

   (n) $y = \frac{xx^2(x^2 - 1)}{3} - 3$

Sol: $y' = \frac{5x^4}{3} - x^2$

   (ñ) $y = \frac{1}{x^3}$

Sol: $y' = -\frac{3}{x^4}$

   (o) $y = x^{\frac{1}{2}}$

Sol: $y' = \frac{1}{2\sqrt{x}}$

   (p) $y = x^{\frac{2}{3}}$

Sol: $y' = \frac{2}{3\sqrt[3]{x}}$

   (q) $y = x^{\frac{-2}{3}}$

Sol: $y' = -\frac{2}{3x^{\frac{5}{3}}}$

   (r) $y = x^{\frac{1}{2}} + x^{\frac{1}{5}} + x^{\frac{1}{6}}$

Sol: $y' = \frac{\frac{x^{\frac{49}{30}}}{2} + x^{\frac{13}{10}} + \frac{x^{\frac{4}{3}}}{5}}{x^{\frac{32}{15}}}$

   (s) $y = \sqrt{3}\sqrt{x}$

Sol: $y' = \frac{\sqrt{3}}{2\sqrt{x}}$

2. p80e16-cont - Calcula las siguientes derivadas:

(a) $y = \frac{x^3}{\sqrt{x}}$

Sol: $y' = \frac{5x^{\frac{3}{2}}}{2}$

(b) $y = x^3 x^{\frac{1}{3}}$

Sol: $y' = \frac{10x^{\frac{7}{3}}}{3}$

(c) $y = \frac{\sqrt{x}}{x}$

Sol: $y' = -\frac{1}{2x^{\frac{3}{2}}}$

(d) $y = \left(1 - x^2\right)^3$

Sol: $y' = -6x \left(x^2 - 1\right)^2$

(e) $y = \sqrt{2x - 4}$

Sol: $y' = \frac{\sqrt{2}}{2\sqrt{x-2}}$

(f) $y = \sqrt{2 - x}$

Sol: $y' = -\frac{1}{2\sqrt{2-x}}$

(g) $y = \sqrt[3]{2}\sqrt[3]{x^2}$

Sol: $y' = \frac{2\sqrt[3]{2}\,\mathrm{sign}\,(x)}{3\sqrt[3]{|x|}}$

(h) $y = \sqrt{3x^2 - 1}$

Sol: $y' = \frac{3x}{\sqrt{3x^2-1}}$

(i) $y = \frac{2x}{\sqrt{x-1}}$

Sol: $y' = \frac{x-2}{(x-1)^{\frac{3}{2}}}$

(j) $y = \sqrt{\frac{1-x}{x+1}}$

Sol: $y' = \frac{\sqrt{\frac{1-x}{x+1}}}{x^2-1}$

(k) $y = e^{2x}$

Sol: $y' = 2e^{2x}$

(l) $y = 2^{5x}$

Sol: $y' = 5 \cdot 32^x \log{(2)}$

(m) $y = 8^{3x^2-1}$

Sol: $y' = 9 \cdot 2^{9x^2-2}x \log{(2)}$

(n) $y = a^x x^a$

Sol: $y' = a^x x^{a-1} \left(a + x \log{(a)}\right)$

(ñ) $y = e^{\sqrt{x}}$

Sol: $y' = \frac{e^{\sqrt{x}}}{2\sqrt{x}}$

(o) $y = \frac{\log{(2x-1)}}{\log{(10)}}$

Sol: $y' = \frac{2}{(2x-1)\log{(10)}}$

(p) $y = \log{(x + 3)}$

Sol: $y' = \frac{1}{x+3}$

3. p80e17 - Calcula las siguientes derivadas:

(a) $y = \log\left(3x^2 - 7\right)$

> **Sol:** $y' = \frac{6x}{3x^2 - 7}$

(b) $y = \log\left((x-2)^2\right)$

> **Sol:** $y' = \frac{2}{x-2}$

(c) $y = \frac{\log\left(x^2 - 2x\right)}{\log(10)}$

> **Sol:** $y' = \frac{2(x-1)}{x(x-2)\log(10)}$

(d) $y = \frac{\log\left(2x^3 + 3x^2\right)}{\log(2)}$

> **Sol:** $y' = \frac{6(x+1)}{x(2x+3)\log(2)}$

(e) $y = \sqrt{\log(x)}$

> **Sol:** $y' = \frac{1}{2x\sqrt{\log(x)}}$

(f) $y = \frac{\log(x)}{x}$

> **Sol:** $y' = \frac{1 - \log(x)}{x^2}$

(g) $y = \log\left(\frac{1-x}{x+1}\right)$

> **Sol:** $y' = \frac{2}{x^2 - 1}$

(h) $y = \log\left(x^{\frac{3}{4}}\right)$

> **Sol:** $y' = \frac{3}{4x}$

(i) $y = \frac{\log(2x+1)}{\log(4)}$

> **Sol:** $y' = \frac{1}{(2x+1)\log(2)}$

(j) $y = \log\left(\frac{e^x}{e^x - 1}\right)$

> **Sol:** $y' = \frac{1}{1 - e^x}$

(k) $y = \frac{1 - \log(x)}{\log(x) + 1}$

> **Sol:** $y' = -\frac{2}{x(\log(x)+1)^2}$

(l) $y = \frac{e^x}{x-1}$

> **Sol:** $y' = \frac{(x-2)e^x}{x^2 - 2x + 1}$