1. p33e52 - Calcula los siguientes límites:

(a) $\lim_{x\to 3}\left(\frac{x^4-20x-21}{x^2+11x-42}\right)$

Sol: $\frac{88}{17}$

(b) $\lim_{x\to\infty}\left(\frac{x^3-7x+3}{-5x^3-x+3}\right)$

Sol: $-\frac{1}{5}$

(c) $\lim_{x\to 0}\left(\frac{\sin(x)}{x}\right)$

Sol: 1

(d) $\lim_{x\to 0}\left(\frac{e^x-1}{x}\right)$

Sol: 1

(e) $\lim_{x\to 0}\left(\frac{1-\cos(x)}{x^2}\right)$

Sol: $\frac{1}{2}$

(f) $\lim_{x\to 0}\left(\frac{\frac{x^2}{6}-x+\sin(x)}{x^3}\right)$

Sol: ∞

(g) $\lim_{x\to 0}\left(\frac{-\frac{x^3}{3}-x+\operatorname{atan}(x)}{x^3}\right)$

Sol: $-\frac{2}{3}$

(h) $\lim_{x\to 0}\left(\frac{(x-\sin(x))\sin(x)}{x}\right)$

Sol: 0

(i) $\lim_{x\to 0}\left(-\frac{1}{\sin(x)}+\frac{1}{x}\right)$

Sol: 0

(j) $\lim_{x\to 0}\left(\frac{\frac{1}{\log(10)}\log\left(\frac{\sin(x)}{x}\right)}{x}\right)$

Sol: 0

(k) $\lim_{x\to\infty}(1-e^{-x})^{x^2}$

Sol: 1

(l) $\lim_{x\to 0}\cos^{\frac{3}{x^2}}(2x)$

Sol: e^{-6}

(m) $\lim_{x\to 1}\tan^{\tan\left(\frac{\pi x}{2}\right)}\left(\frac{\pi x}{4}\right)$

Sol: e^{-1}

(n) $\lim_{x\to 1}x^{\frac{1}{1-x}}$

Sol: e^{-1}

(ñ) $\lim_{x\to 0}\left(\frac{\frac{1}{\log(10)}\log\left(\frac{\tan(x)}{x}\right)}{x}\right)$

Sol: 0

2. p33e53 - Calcula los siguientes límites:

(a) $\lim_{x\to 0}\left(\frac{\log\left(e^x+x^3\right)}{x}\right)$

Sol: 1

(b) $\lim_{x\to 0}\left(\left(1+\frac{1}{x}\right)^{\frac{1}{2}}-\left(1+\frac{4}{x}\right)^{\frac{1}{2}}\right)$

Sol: $-\infty$

(c) $\lim_{x\to 0}\left(\frac{a^x-b^x}{x}\right)$

Sol: $\log(a)-\log(b)$

(d) $\lim_{x\to 0}\left(\frac{\log(\cos(3x))}{x^2}\right)$

Sol: $-\frac{9}{2}$

(e) $\lim_{x\to 0}\left(\frac{\sin(x)-\cos(x)}{1-\cos(x)}\right)$

Sol: $-\infty$

(f) $\lim_{x\to 0}\left(\frac{\log(x+1)}{\sqrt[4]{x^3}}\right)$

Sol: 0

(g) $\lim_{x\to 0}\left(\frac{2(\sin(x)+\cos(x))}{x}\right)$

Sol: ∞

(h) $\lim_{x\to\infty}\left(\frac{\log\left(\frac{x+1}{x}\right)}{\frac{1}{x}}\right)$

Sol: 1

(i) $\lim_{x\to -1}\left(\frac{x^3+1}{x^2-3x+4}\right)$

Sol: 0

(j) $\lim_{x\to 0}\left(\frac{x-\sin(x)}{-x+\tan(x)}\right)$

Sol: $\frac{1}{2}$

(k) $\lim_{x\to 0}\left(\frac{1-\cos(x)}{\sin(x)+\cos(x)}\right)$

Sol: 0

3. p33e54 - Calcula los siguientes límites:

(a) $\lim_{x\to\frac{\pi}{2}} \left(\log\left(\tan\left(x\right)\right)\cos\left(x\right)\right)$

Sol: 0

(b) $\lim_{x\to 0} \left(\sin\left(x\right)+\cos\left(x\right)\right)^{\frac{1}{x}}$

Sol: e

(c) $\lim_{x\to\frac{\pi}{2}} \tan^{\cos\left(x\right)}\left(x\right)$

Sol: 1

(d) $\lim_{x\to 0} \left(e^x+x^3\right)^{\frac{1}{x}}$

Sol: e

(e) $\lim_{x\to 0} \left(\left(e^{\sin\left(x\right)}-1\right)\tan\left(x+\frac{\pi}{2}\right)\right)$

Sol: -1

(f) $\lim_{x\to\infty} \left(x+1\right)^x$

Sol: ∞

(g) $\lim_{x\to\infty} \left(x\log\left(\frac{x+1}{x}\right)\right)$

Sol: 1

(h) $\lim_{x\to 0} \left(1-\sin\left(2x\right)\right)^{\cot\left(3x\right)}$

Sol: $e^{-\frac{2}{3}}$

(i) $\lim_{x\to 0} \left(\frac{1}{x}\right)^{\tan\left(x\right)}$

Sol: 1

(j) $\lim_{x\to\infty} \left(-x+\sqrt{x^2+x+2}\right)$

Sol: $\frac{1}{2}$

(k) $\lim_{x\to\frac{\pi}{2}} \tan^{\frac{1}{\cos\left(2x\right)}}\left(x\right)$

Sol: 0

(l) $\lim_{x\to 0} \cot^{\sin\left(x\right)}\left(x\right)$

Sol: 1

(m) $\lim_{x\to 0} \left(5\sqrt{1-\cos\left(x\right)}\cot\left(\frac{x}{2}\right)\right)$

Sol: $5\sqrt{2}$

(n) $\lim_{x\to 0} \left(\frac{(x+1)\left(\cot^2\left(x\right)+1\right)}{x^2+x+1}\right)$

Sol: ∞

(ñ) $\lim_{x\to\frac{\pi}{2}} \left(\frac{1}{\cos\left(2x\right)}-\frac{\tan\left(x\right)}{1-\frac{4x}{\pi}}\right)$

Sol: $-\infty$

(o) $\lim_{x\to 0} \left(\left(1-\cos\left(x\right)\right)\cot\left(x\right)\right)$

Sol: 0