1) а) $\lim\limits_{x\to 6} \dfrac{x^2-36}{x^2-x-30} = \dfrac{(x-6)(x+6)}{(x-6)(x+5)} = \dfrac{x+6}{x+5} = \dfrac{12}{11}$

б) $\lim\limits_{x\to 7} \dfrac{x^2-49}{x^2-13x+42} = \dfrac{(x-7)(x+7)}{(x-7)(x-6)} = \dfrac{x+7}{x-6} = \dfrac{14}{1} = 14$

в)

2) $\lim\limits_{x\to 0} \dfrac{3x\,tg\,4x}{1-\cos 4x} = 3tg(4)\lim\limits_{x\to 0} \dfrac{xx}{\cos(4)x} =$

$tg(0) = \sin(0)/\cos(0)$

$= 3\dfrac{\sin(4)}{\cos(4)} \cdot \dfrac{0\cdot 0}{\cos(4)\cdot 0} = \dfrac{3\sin(4)\cdot 0\cdot 0}{\cos(4)(1-\cos(4)\cdot 0} = \dfrac{0}{\cos(4)\cdot 1} = 0$

е) $\lim\limits_{x\to\infty} \left(\dfrac{4x}{4x+3}\right)^{\frac{5x^2}{7x-1}}$

ж) $\lim\limits_{x\to 0} \dfrac{5^x-1}{x} = \ln 5$

~~[illegible]~~

з) $\lim\limits_{x\to\infty} \dfrac{\ln(x^2-x+1)}{\ln(x^{10}+x+1)} = \lim\limits_{x\to\infty} \dfrac{\frac{1}{(x^2-x+1)}\frac{d}{dx}((x^2-x+1))}{\frac{1}{x^{10}+x+1}\frac{d}{dx}((x^{10}+x+1))} = \dfrac{1}{5}$