1) $\lim\limits_{x\to 5} \dfrac{(23-2x^2)\,(3x^2+17)^2}{4x^6+x-1} = \dfrac{-18}{4} = -\dfrac{9}{2}$

2) $\lim\limits_{x\to 5} \dfrac{(97-2x)^3}{2x(3x^2+15)+8x} = \dfrac{-8\cdot 3}{6} = -\dfrac{4}{3}$

3) $\lim\limits_{x\to 5} \dfrac{2x^3+13^x(x+18)}{(27-x)(2x+19)^2} = \dfrac{2}{-4} = -\dfrac{1}{2}$

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

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

6) $\lim\limits_{x\to 7} \dfrac{\sqrt{x+2}-\sqrt[3]{x+20}}{\sqrt[4]{x+9}-2} =$

7) $\lim\limits_{x\to 0} \dfrac{3x\,tg\,4x}{1-\cos 4x} = \dfrac{3x\cdot tg\,4x}{2\sin^2 2x} = \dfrac{3}{2}$

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

$= e^{\lim \left(\frac{-3}{4x+3}\right)\cdot\left(\frac{5x^2}{7x-1}\right)} = e^{-\frac{15}{28}}$