1398.
$$\lim_{x\to 0}\frac{\cos x-e^{-\frac{x^2}{2}}}{x^4}=\lim_{x\to 0}\frac{1-\frac{x^2}{2}+\frac{x^4}{24}-\frac{x^6}{6!}-\left(1-\frac{x^2}{2}+\frac{\left(-\frac{x^2}{2}\right)^2}{2}+\frac{\left(-\frac{x^2}{2}\right)^3}{3!}\right)}{x^4}=$$
$$=\lim_{x\to 0}\frac{x^4\left(\frac{1}{24}-\frac{1}{8}\right)+x^6\left(\frac{1}{48}-\frac{1}{720}\right)}{x^4}=\lim_{x\to 0}\left(-\frac{1}{12}+x^2\left(\frac{1}{48}-\frac{1}{720}\right)\right)=\underline{-\frac{1}{12}}.$$

1399.
$$\lim_{x\to 0}\frac{e^x\sin x-x(1+x)}{x^3}=\lim_{x\to 0}\frac{\left(1+x+\frac{x^2}{2}+\frac{x^3}{3!}\right)\left(x-\frac{x^3}{3!}\right)-x-x^2}{x^3}=$$
$$=\lim_{x\to 0}\frac{x+x^2+\frac{x^3}{2}+\frac{x^4}{3!}-\frac{x^3}{3!}-\frac{x^4}{3!}-\frac{x^5}{2\cdot 3!}-\frac{x^6}{3!\cdot 3!}-x-x^2}{x^3}=$$
$$=\lim_{x\to 0}\frac{x^3\left(\frac{1}{2}-\frac{1}{3!}\right)-\frac{x^5}{2\cdot 3!}-\frac{x^6}{3!\cdot 3!}}{x^3}=\lim_{x\to 0}\left(\frac{1}{3}-\frac{x^2}{2\cdot 3!}-\frac{x^3}{3!\cdot 3!}\right)=\underline{\frac{1}{3}}.$$

1400.
$$\lim_{x\to +\infty}x^{\frac{3}{2}}\left(\sqrt{x+1}+\sqrt{x-1}-2\sqrt{x}\right)=\lim_{x\to+\infty}x^{\frac{3}{2}}\left(\sqrt{x+1}-\sqrt{x}-\left(\sqrt{x}-\sqrt{x-1}\right)\right)=$$
$$=\lim_{x\to+\infty}x^{\frac{3}{2}}\left(\frac{1}{\sqrt{x+1}+\sqrt{x}}-\frac{1}{\sqrt{x}+\sqrt{x-1}}\right)=\lim_{x\to+\infty}x^{\frac{3}{2}}\frac{\sqrt{x-1}-\sqrt{x+1}}{\left(\sqrt{x+1}+\sqrt{x}\right)\left(\sqrt{x}+\sqrt{x-1}\right)}=$$
$$=\lim_{x\to+\infty}\frac{-2x^{\frac{3}{2}}}{\left(\sqrt{x}+\sqrt{x+1}\right)\left(\sqrt{x}+\sqrt{x-1}\right)\left(\sqrt{x+1}+\sqrt{x-1}\right)}=\lim_{x\to+\infty}\frac{-2}{\frac{\sqrt{x}+\sqrt{x+1}}{\sqrt{x}}\cdot\frac{\sqrt{x}+\sqrt{x-1}}{\sqrt{x}}\cdot\frac{\sqrt{x+1}+\sqrt{x-1}}{\sqrt{x}}}=$$
$$=\lim_{x\to+\infty}\frac{-2}{\left(1+\sqrt{1+\frac{1}{x}}\right)\left(1+\sqrt{1-\frac{1}{x}}\right)\left(\sqrt{1+\frac{1}{x}}+\sqrt{1-\frac{1}{x}}\right)}=\frac{-2}{(1+1)(1+1)(1+1)}=-\frac{2}{8}=\underline{-\frac{1}{4}}.$$

1401.
$$\lim_{x\to+\infty}\left(\sqrt[6]{x^6+x^5}-\sqrt[6]{x^6-x^5}\right)=$$
$$=\lim_{x\to+\infty}x^{\frac{5}{6}}\left(\sqrt[6]{x+1}-\sqrt[6]{x-1}\right)=\lim_{x\to+\infty}x^{\frac{5}{6}}\frac{\sqrt[3]{x+1}-\sqrt[3]{x-1}}{\sqrt[6]{x+1}+\sqrt[6]{x-1}}=$$
$$=\lim_{x\to+\infty}x^{\frac{5}{6}}\frac{x+1-(x-1)}{\left(\sqrt[6]{x+1}+\sqrt[6]{x-1}\right)\left((x+1)^{\frac{2}{3}}+((x+1)(x-1))^{\frac{1}{3}}+(x-1)^{\frac{2}{3}}\right)}=\lim_{x\to+\infty}\frac{2x^{\frac{5}{6}}}{\left(\sqrt[6]{x+1}+\sqrt[6]{x-1}\right)\left((x+1)^{\frac{2}{3}}+((x+1)(x-1))^{\frac{1}{3}}+(x-1)^{\frac{2}{3}}\right)}=$$
$$=\lim_{x\to+\infty}\frac{2}{\frac{\sqrt[6]{x+1}+\sqrt[6]{x-1}}{\sqrt[6]{x}}\cdot\frac{(x+1)^{\frac{2}{3}}+((x+1)(x-1))^{\frac{1}{3}}+(x-1)^{\frac{2}{3}}}{x^{\frac{2}{3}}}}=\lim_{x\to+\infty}\frac{2}{\left(\sqrt[6]{1+\frac{1}{x}}+\sqrt[6]{1-\frac{1}{x}}\right)\left(\left(1+\frac{1}{x}\right)^{\frac{2}{3}}+\left(1-\frac{1}{x^2}\right)^{\frac{1}{3}}+\left(1-\frac{1}{x}\right)^{\frac{2}{3}}\right)}=$$