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$$\lim_{x\to 2}\frac{x^2f(x)-4f(x)-3x^2+12}{xf^2(x)-2f^2(x)-9x+18}=\lim_{x\to 2}\frac{f(x)\left(x^2-4\right)-3\left(x^2-4\right)}{f^2(x)(x-2)-9(x-2)}=$$

$$=\lim_{x\to 2}\frac{\left(x^2-4\right)\left(f(x)-3\right)}{(x-2)\left(f^2(x)-9\right)}=\lim_{x\to 2}\frac{\cancel{(x-2)}\,(x+2)\,\cancel{\left(f(x)-3\right)}}{\cancel{(x-2)}\,\cancel{\left(f(x)-3\right)}\left(f(x)+3\right)}=$$

$$=\lim_{x\to 2}\frac{x+2}{f(x)+3}\overset{\lim\limits_{x\to 2}f(x)=3}{=}\frac{2+2}{3+3}=\frac{4}{6}=\boxed{\frac{2}{3}}$$