19. $f(x) = 2x + 5x^{-3}$

$f'(x) = 2 + 5(-3)x^{-4}$

$= 2 - 15x^{-4}$

$f''(x) = -15(-4)x^{-5}$

$= 60x^{-5}$

$= \boxed{\frac{60}{x^5}}$

20. $f(x) = \csc x$

$f'(x) = \underbrace{-\csc x}_{P} \underbrace{\cot x}_{Q}$

$P' = -(-\csc x \cot x) \quad Q' = -\csc^2 x$

$P'Q + PQ'$

$f''(x) = \csc x \cot x \cot x + (-\csc x)(-\csc^2 x)$

$= \boxed{\csc x \left[\cot^2 x + \csc^2 x\right]}$

$= \csc x \left[\csc^2 x - 1 + \csc^2 x\right]$

$= \boxed{\csc x \left[2\csc^2 x - 1\right]}$

$\sin^2 x + \cos^2 x = 1$

$\tan^2 x + 1 = \sec^2 x$

$\rightarrow 1 + \cot^2 x = \csc^2 x$

$1 = \csc^2 x - \cot^2 x$

$\cot^2 x = \csc^2 x - 1$