

$$(1) f'(x) = \cos \frac{x^2}{3} - \frac{2x^2}{3} \sin \frac{x^2}{3} \quad (14) y' = \frac{x(3x^2-10)}{\sqrt{x^2-5}}$$

$$(2) h'(t) = \frac{t^{3/2} - 2t - 2}{2t^2} \quad (15) y' = \frac{e^{2x} - e^{-2x}}{\sqrt{e^{2x} - e^{-2x}}}$$

$$(3) g'(x) = \frac{2(15-x)}{3x(5-x)}$$

$$(16) y' = \frac{4(1-8x)}{1+16x^2}$$

$$(4) h'(z) = -\frac{2z^3}{e^{z^{4/2}}}$$

$$(17) h'(x) = \frac{2(\cos 2x - x \sin 2x)}{e^{x^2}}$$

$$(5) f'(x) = -\frac{1}{2x^{1/2}(x^{1/2}-1)^2}$$

$$(6) f'(x) = \frac{(5-x^2)^2(5-x^2-6x^2 \ln x)}{x} \quad (18) g'(x) = \frac{3}{x \ln x}$$

$$(7) g'(t) = \frac{t(2-t)}{e^t}$$

$$(19) y' = \frac{y(1-10x)}{5x^2-x+1}$$

$$(8) r'(s) = -6 \sin s - 5s \cos s$$

$$(20) y' = \frac{10xy^2+1}{2y(9y-5x^2)}$$

$$(9) f'(x) = \frac{4-2x^{3/2}-x}{x^3}$$

$$(21) y' = \frac{x}{5y}$$

$$(10) y' = \frac{-1}{x(1+x)}$$

$$(22) y' = -\frac{3(x-2)}{2(y+1)}$$

$$(11) y' = \frac{x^2-4x+2}{(2-x)^2}$$

$$(23) y' = \frac{2y \operatorname{arccsc} 2x}{\sqrt{1-4x^2}}$$

$$(12) f'(x) = \frac{2e^{3x} - e^{2x} - 6xe^{3x} + 2xe^{2x}}{(e^{3x} - e^{2x})^2}$$

$$(13) f'(x) = \frac{2}{\sqrt{1-x^2}}$$