**Differentiation by Rule**

Find the gradient function $\frac{dy}{dx}$ when:

(a) $y=x^{4}$ (b) $y=x^{9}$

(c) $y=x^{7}$ (d) $y=x^{6}$

(e) $y=x$ (f) $y=x^{10}$

Find the gradient function $\frac{dy}{dx}$ when:

(a) $y=7x^{2}$

(b) $y=3x^{5}$

(c) $y=10x^{6}$

(d) $y=2x^{9}$

(e) $y=\frac{1}{2}x^{8}$

(f) $y=\frac{1}{5}x^{4}$

(g) $y=0.3x^{5}$

(h) $y=-6x^{3}$

Find the gradient function $\frac{dy}{dx}$ when:

(a) $y=x^{2}+x^{5}$

(b) $y=3x^{2}+7x^{5}$

(c) $y=5x^{4}-x^{3}$

(d) $y=2x^{3}-x^{2}+5x$

(e) $y=3x+6x^{4}$

(f) $y=0.5x^{7}+3$

(g) $y=\frac{1}{4}x^{5}-x^{3}+7x$

(h) $y=x^{3}+2x^{2}-7x+10$

(a) Expand and simplify$\left(x+3\right)\left(x^{2}-5\right)$

(b) Hence find the gradient function $\frac{dy}{dx}$ when $y=\left(x+3\right)\left(x^{2}-5\right)$

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