Finding a derivative

1. $g(x) = (2x^4 + 7)(x - 6)$

$g'(x) = (2x^4+7)(1) + (8x^3)(x-6)$

Product Rule
$uv' + u'v$

$= 2x^4 + 7 + 8x^4 - 48x^3$

$= 10x^4 - 48x^3 + 7$

2. $f(x) = \frac{3x-4}{x^3-2}$

Quotient Rule

$\frac{u'v - uv'}{v^2}$

$= \frac{3(x^3-2) - (3x-4)(3x^2)}{(x^3-2)^2}$

$= \frac{3x^3 - 6 - 9x^3 + 12x^2)}{x^6 - 4x + 4}$

$= \frac{-6x^3 + 12x^2 - 6}{x^6 - 4x^3 + 4}$

3. $y = \dfrac{\cos x}{x^3}$

Quotient Rule

$$\frac{u'v - uv'}{v^2}$$

$$y = \frac{-\sin x(x^3) - \cos x(3x^2)}{(x^3)^2}$$

$$= \frac{-x^3 \sin x - 3x^2 \cos x}{x^6}$$

$$= \frac{x^2(-x\sin x - 3\cos x)}{x^6}$$

$$= \frac{-x\sin x - 3\cos x}{x^4} \neq$$