3. (12 points) This table describes two functions, $f(x)$ and $g(x)$.

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
1	π	1.4	1.5	-0.2
3	5	1	1	3
5	2.5π	0.3	6	4

a) (4 pts) Find $h'(3)$, assuming $h(x) = f(g(x))$. Show your work.

$$h'(3) = f'(g(3)) \cdot g'(3) , \text{ by the } \underline{\text{Chain Rule}}.$$
$$= f'(1) \cdot g'(3)$$
$$= (1.4) \cdot (3) = 4.2$$

b) (4 pts) Find $j'(5)$, if $j(x) = \frac{f(x)}{g(x)}$. Show your work.

$$j'(5) = \frac{g(5) f'(5) - f(5) g'(5)}{g(5)^2} \quad \text{(Quotient Rule)} \text{ by the}$$

$$= \frac{6 \cdot (0.3) - (2.5\pi) 4}{36} = \frac{1.8 - 10\pi}{36}$$

c) (4 pts) Find $k'(5)$, where $k(x) = xg(x)$. Show your work.

$$k'(x) = 1 \cdot g(x) + x \cdot g'(x), \text{ by the Product Rule,}$$

$$k'(5) = 1 \cdot 6 + 5 \cdot 4 = 26$$