

**Practice Quiz 4 (L9-L10)**

1. Find the derivatives.

(i)  $\frac{d}{dx} \left( \frac{1}{x^2} - 6 \sec(3x - 1) + \pi^2 \right)$

(ii)  $f''(x)$  if  $f(x) = e^{3x^2-1} - 6x^2 \ln(x)$

2. The volume of a sphere of radius  $r$  is  $\frac{4}{3}\pi r^3$ .

(i) What is the instantaneous rate of change of the volume of a sphere with respect to its radius?

(ii) What is the rate of change of the volume of a sphere of radius  $r = 2$  with respect to radius.