Compute derivatives of the following functions using derivative rules.

1. $f(x) = (x-2)(2x+3)$

2. $f(t) = \sqrt{t} - e^t$

3. $f(x) = \dfrac{x^2 + x - 1}{\sqrt{x}}$

4. $V(r) = \dfrac{4}{3}\pi r^3$

5. $f(x) = e^{x-3}$

6. Use the definition of the derivative to show $\frac{d}{dx}x^3 = 3x^2$.

7. Use the definition of the derivative to show $\frac{d}{dx}x^{-1} = (-1)x^{-2}$.

8. Estimate $f'(0)$ to three decimal digits if $f(x) = 3^x$