Quiz 4

Name: Key

1. [2 pts each] Compute the derivatives of each of the following functions.

(a) $f(x) = 8x^4$

$f'(x) = 32x^3$

(c) $F(x) = \dfrac{25}{3x^2} = \dfrac{25}{3} \cdot x^{-2}$

$F'(x) = -\dfrac{50}{3} \cdot x^{-3}$

(b) $G(r) = \dfrac{1}{\sqrt{r}} = r^{-1/2}$

$G'(r) = -\dfrac{1}{2} r^{-3/2}$

(d) $R(t) = 1 - \dfrac{7}{\sqrt[3]{t}} + \dfrac{2}{\sqrt[6]{t}} = 1 - 7t^{-1/3} + 2t^{-1/6}$

$R'(t) = 0 - \left(-\tfrac{1}{3}\right) \cdot 7 \cdot t^{-4/3} - 2 \cdot \left(\tfrac{1}{6}\right) t^{-7/6}$

$R'(t) = \dfrac{7}{3} t^{-4/3} - \dfrac{1}{3} t^{-7/6}$

or $R'(t) = 2.33\, t^{-4/3} - 0.33\, t^{-7/6}$

(e) $f(t) = \dfrac{(t+1)^2}{t} = \dfrac{t^2 + 2t + 1}{t} = t + 2 + \dfrac{1}{t}$

$f'(t) = 1 + 0 + -\dfrac{1}{t^2}$