

(1) [2 points] Differentiate

$$g(t) = t^3 \cos(t)$$

(2) [3 points] Differentiate

$$y = \frac{t^2}{3t^2 - 2t + 1}$$

(3) [2 points] Differentiate

$$y = \sqrt{\sin(x)}$$

(4) [3 points] Differentiate

$$F(z) = \sqrt{\frac{z-1}{z+1}}$$

(5) [5 points] Differentiate

$$y = \sec^2 x + \tan^2 x$$