

(1) Find an equation of the tangent line and normal line to the curve  $y = x\sqrt{x}$  at the point  $(1, 1)$ .

(2) Find the points on the curve  $y = x^4 - 6x^2 + 4$  where the tangent line is horizontal.

(3) At what point on the curve  $y = e^x$  is the tangent line parallel to the line  $y = 2x$ ?

(4) Let  $f(x) = xe^x$ . Find  $f^{(n)}(x)$ .

(5) Find the 54th derivative of  $\sin x$