

1) FIND THE DERIVATIVES OF THE FOLLOWING FUNCTIONS!

a) $f(x) = 5x^2 + 2x^{-2} + \frac{1}{x}$

b) $g(t) = 2t - 4\sqrt{t} + \frac{3}{\sqrt[3]{t}}$

c) $f(x) = (x^3 + 2x)\left(5 - \frac{1}{x^2}\right)$

d) $f(x) = \frac{\sqrt{x+1}}{x^2+2}$

e) $f(x) = \frac{2}{3}x^3 - (x^2+1)(2x^2-3x+1)$

f) $g(x) = \frac{x}{x^2+1} - \frac{x-1}{x^2-1}$

g) $f(x) = (-x^2 + 6x)^{54}$

h) $h(t) = \frac{t^2 - 2t}{(t+1)(t^2+1)}$

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

j) $f(x) = (x^2+1)(x^2-3)(5x^2+x)$

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

2) FIND THE EQUATION OF THE TANGENT LINE TO $f(x) = \sqrt{2x+5}$ AT $(2, 3)$

3) FIND $h'(2)$ GIVEN

$$h'(x) = \frac{x^2 f(x)}{f(x) - g(x)}$$

AND

$$f'(2) = 1$$

$$g'(2) = -1$$

$$f(2) = 3$$

$$g(2) = 2$$