TUTORS: THIS IS A TAKE HOME QUIZ

TUTORS: THIS IS A TAKE HOME QUIZ

For the following position functions, find the acceleration functions.

[a] $s(t) = \left(4t^3 - 3\sqrt{t}\right)\left(6t^2 + \frac{1}{t^4}\right)$ [b] $s(t) = \frac{2t^3 - t^2 + 3}{\sqrt{t}}$

TUTORS: THIS IS A TAKE HOME QUIZ

Find a second degree polynomial $f(x)$ such that $f(0) = 5$, $f'(0) = -4$ and $f''(0) = 6$.

TUTORS: THIS IS A TAKE HOME QUIZ

Find the derivatives of the following functions. **DO NOT SIMPLIFY YOUR ANSWERS.**

[a] $f(x) = \left(12t^6 - 7t^5 + 3t^2 - 6\right)\left(5t^4 + 2t^3 - 4t + 9\right)$

[b] $f(x) = \left(9t^7 - t^4 + 7t^3 - 5\right)\left(11t^6 - 4t^5 - 6t + 3\right)$

[c] $f(x) = \frac{5x^3 + 3x^2 + 12}{8 - 2x - 4x^3}$

[d] $f(x) = \frac{4 + 5x^3 - 7x^6}{6x^4 - x^5 + 1}$

TUTORS: THIS IS A TAKE HOME QUIZ

The following table gives the function and derivative values of two differentiable functions $f(x)$ and $g(x)$ for various input values.

x	–2	–1	0	1	2	3
$f(x)$	3	0	1	2	5	4
$f'(x)$	5	2	3	0	4	1
$g(x)$	1	5	2	4	3	0
$g'(x)$	0	4	5	3	1	2

[a] If $h(x) = \frac{g(x)}{f(x)}$, find the equation of the tangent line to $y = h(x)$ at $x = 2$.

[b] If $k(x) = f(x)g(x)$, find the equation of the tangent line to $y = k(x)$ at $x = -1$.

TUTORS: THIS IS A TAKE HOME QUIZ

TUTORS: THIS IS A TAKE HOME QUIZ