



QUIZ #7

SOLUTIONS

*Answer all questions and show all your work. Exact answers are required.
No calculators are permitted.*

Question 1 (6 points)

Find $f'(x)$. Simplify where appropriate.

$$\begin{aligned} \text{a) } f(x) &= \sqrt{x^2 + 3x - 4} & f'(x) &= \frac{1}{2\sqrt{x^2 + 3x - 4}}(x^2 + 3x - 4)' \\ & & &= \frac{2x + 3}{2\sqrt{x^2 + 3x - 4}} \end{aligned}$$

$$\begin{aligned} \text{b) } f(x) &= \sin^4(x^7) & f'(x) &= 4\sin^3(x^7)[\sin(x^7)]' \\ & & &= 4\sin^3(x^7)\cos(x^7)(x^7)' \\ & & &= 28x^6\sin^3(x^7)\cos(x^7) \end{aligned}$$

Question 2 (4 points)

Find $f'(x)$ if $f(x) = \frac{(3x-1)^5}{(2x+5)^3}$. Simplify where appropriate.

$$\begin{aligned} f'(x) &= \frac{[(3x-1)^5]'(2x+5)^3 - (3x-1)^5[(2x+5)^3]'}{[(2x+5)^3]^2} \\ &= \frac{5(3x-1)^4(3)(2x+5)^3 - (3x-1)^5 3(2x+5)^2(2)}{(2x+5)^6} \\ &= \frac{3(3x-1)^4(2x+5)^2[5(2x+5) - 2(3x-1)]}{(2x+5)^6} \\ &= \frac{3(3x-1)^4(4x+27)}{(2x+5)^4} \end{aligned}$$