1.4 The Quotient Rule Worksheet

This document was composed and formatted by Annie Bernatchez.

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1) Use the quotient rule to differentiate each function

a) $h(x) = \frac{x}{x+1}$

b) $h(t) = \frac{2t-3}{t+5}$

c) $h(x) = \frac{x^3}{2x^2-1}$

d) $h(x) = \frac{1}{x^2+3}$

e) $y = \frac{x(3x+5)}{1-x^2}$

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

2) Determine $\frac{dy}{dx}$ at each given value of x.

a) $y = \frac{3x+2}{x+5}$ at $x = -3$

b) $y = \frac{x^3}{x^2+9}$ at $x = 1$

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3) Find the point(s) at which the tangent to the curve is horizontal.

a) $y = \frac{2x^2}{x-4}$

b) $y = \frac{x^2-1}{x^2+x-2}$

4) Determine the equation of the tangent to the curve $y = \frac{x^2-1}{3x}$ at $x = 2$.

Answer Key

1) a) $h'(x) = \frac{1}{(x+1)^2}$ b) $h'(t) = \frac{13}{(t+5)^2}$ c) $h'(x) = \frac{2x^4-3x^2}{(2x^2-1)^2}$ d) $h'(x) = \frac{-2x}{(x^2+3)^2}$ e) $y' = \frac{5x^2+6x+5}{(1-x^2)^2}$ f) $\frac{dy}{dx} = \frac{x^2+4x-3}{(x^2+3)^2}$

2) a) $\frac{13}{4}$ b) $\frac{7}{25}$

3) a) $(0,\ 0)$ and $(8,\ 32)$ b) no horizontal tangents

4) $y = \frac{5}{12}x - \frac{1}{3}$

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