Calculus 12
6-4 Questions

1. Differentiate.

a) $f(x) = \dfrac{x-1}{x+1}$

b) $f(x) = \dfrac{2x-1}{x^2+1}$

c) $g(x) = \dfrac{x}{x^2+2x-1}$

d) $g(x) = \dfrac{x^3-1}{x^2+x+1}$

e) $y = \dfrac{\sqrt{x}}{x^2+1}$

f) $y = \dfrac{\sqrt{x}+2}{\sqrt{x}-2}$

g) $f(t) = \dfrac{2t+1}{t^2-3t+4}$

h) $g(t) = \dfrac{2t^2+3t+1}{t-1}$

i) $f(x) = \dfrac{1}{x^4-x^2+1}$

j) $f(x) = \dfrac{ax+b}{cx+d}$

k) $f(x) = \dfrac{x^6}{x^5-10}$

l) $f(x) = \dfrac{1-\frac{1}{x}}{x+1}$

2. Find the domain of f and compute its derivative.

a) $f(x) = \dfrac{2+x}{1-2x}$

b) $f(x) = \dfrac{x}{x^2-1}$

c) $f(x) = \dfrac{1}{(x+1)(2x-3)}$

d) $f(x) = \dfrac{2x+1}{x^2+2x-3}$

e) $f(x) = \dfrac{x^2+2x}{x^4-1}$

f) $f(x) = \dfrac{x^2}{\sqrt{x}-3}$

3. Find an equation of the tangent line to the curve at the given point.

a) $y = \dfrac{x}{x-2}, \left(4, 2\right)$

b) $y = \dfrac{1+3x}{2-3x}, \left(1, -4\right)$

c) $y = \dfrac{1}{x^2+1}, \left(-2, \dfrac{1}{5}\right)$

d) $y = \dfrac{x^3-1}{1+2x^2}, \left(1, 0\right)$