

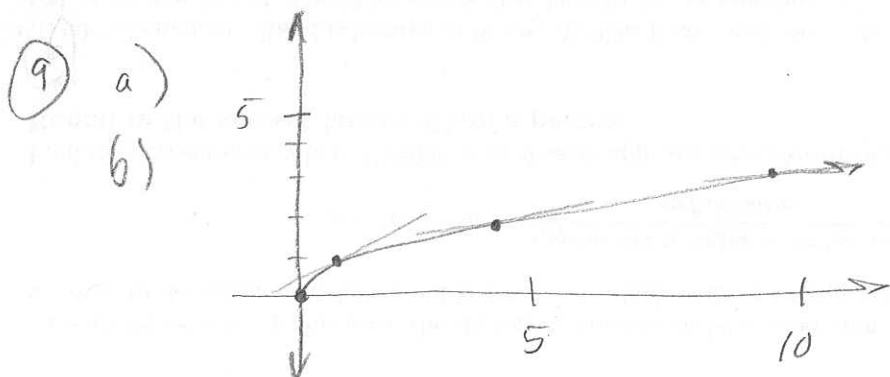
① $y = 5x^3 - 7x^2 + x - 3$
 $y' = 15x^2 - 2(x+1)$

② $f(x) = \frac{3}{2x^4} = \frac{3}{2}x^{-4}$
 $f'(x) = -\frac{12}{2}x^{-5} = -\frac{6}{x^5}$

③ $g(x) = \frac{3x^2}{2} = \frac{3}{2}x^2$
 $g'(x) = 3x$

④ $f(x) = 5x^2 + x - \frac{6}{x^2}$
 $= 5x^2 + x - 6x^{-2}$
 $f'(x) = 10x + 1 + 12x^{-3}$
 $= 10x + 1 + \frac{12}{x^3}$

⑤ $y = 3\sqrt{x} = 3x^{\frac{1}{2}}$
 $y' = \frac{3}{2}x^{-\frac{1}{2}} = \frac{3}{2\sqrt{x}}$



c) as $x \rightarrow \infty$ the slopes of the tangent lines go to zero

⑥ $h(x) = \frac{4}{\sqrt{x}} = 4x^{-\frac{1}{2}}$
 $h'(x) = -2x^{-\frac{3}{2}} = -\frac{2}{x^{\frac{3}{2}}} = -\frac{2}{\sqrt{x^3}}$

⑦ $y = \frac{4}{x} - 3\sqrt{x^5} = 4x^{-1} - 3x^{\frac{5}{2}}$
 $y' = -4x^{-2} - \frac{15}{2}x^{\frac{3}{2}}$
 $= -\frac{4}{x^2} - \frac{15}{2}\sqrt{x^3}$

⑧ $g(x) = 7\sqrt[3]{x} = 7x^{\frac{1}{3}}$
 $g'(x) = \frac{7}{3}x^{-\frac{2}{3}} = \frac{7}{3x^{\frac{2}{3}}} = \frac{7}{3\sqrt[3]{x^2}}$

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

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

$f'(x) = \frac{1}{2\sqrt{x}}$

x	f'(x)
1	1/2
4	1/4
9	1/6
49	1/14
100	1/20